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Engineering

Province of Nova Scotia

REPORT OF THE DEPARTMENT OF MINES

1911

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HALIFAX, N. S.
COMMISSIONER PUBLIC WORKS AND MINES
KING'S PRINTER
1912

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Province of Nova Scotia

REPORT OF THE DEPARTMENT OF

MINES

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Department of Mines

Report for the Year ended September 30th, 1911.

TO HIS HONOUR, THE HON. JAMES D. McGREGOR,
Lieutenant-Governor of Nova Scotia:

MAY IT PLEASE YOUR HONOUR,—

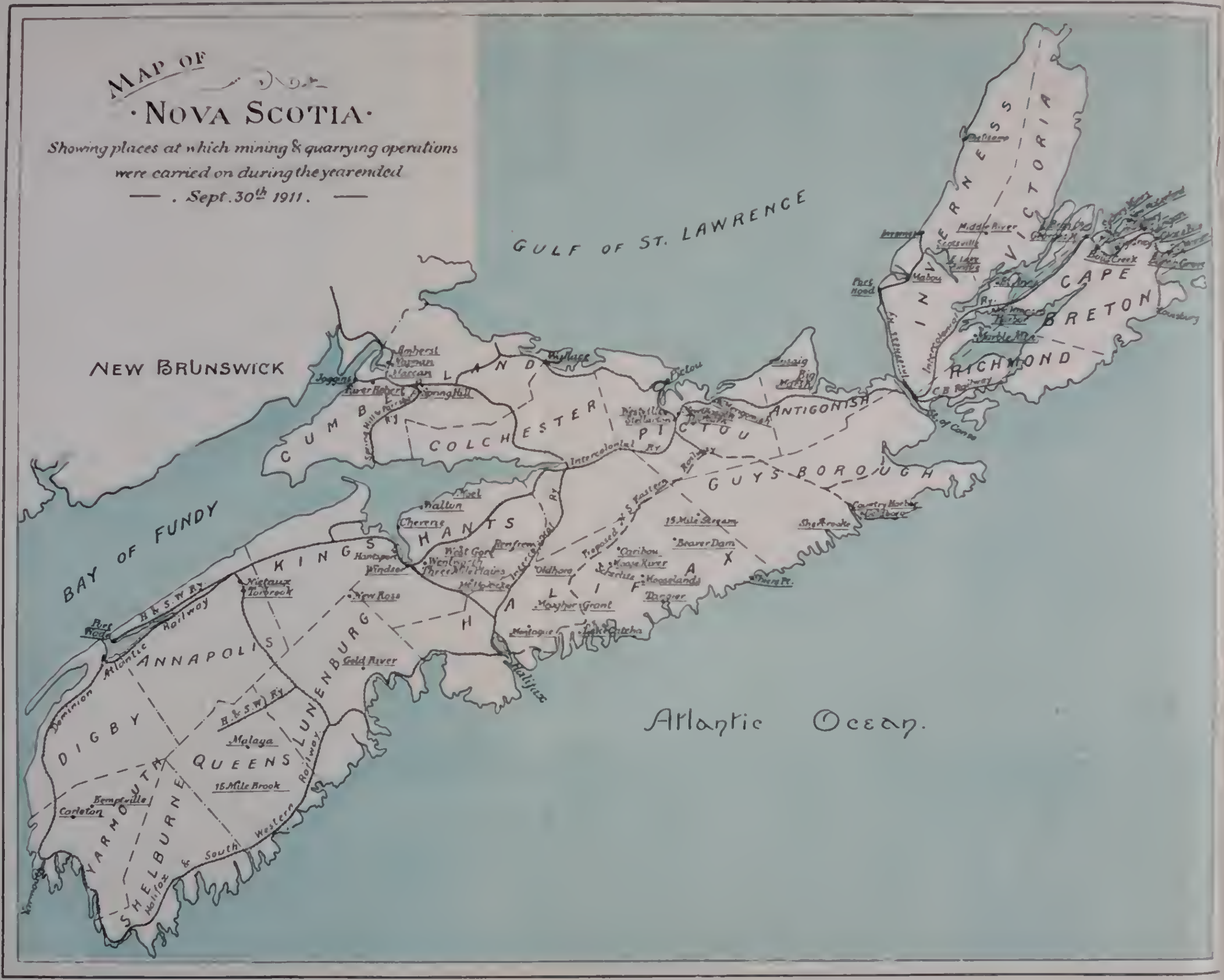
I respectfully present herewith to Your Honour, the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I have the honour to be,

Your Honour's obedient servant,

ERNEST H. ARMSTRONG,
Commissioner of Public Works and Mines.

HALIFAX, December 30th, 1911.



MAP OF
·NOVA SCOTIA·
Showing places at which mining & quarrying operations were carried on during the year ended — . Sept. 30th 1911. —

REPORT

ON THE

MINES OF NOVA SCOTIA

BY HIRAM DONKIN, C. E.

INSPECTOR OF MINES.

Halifax, December 31st, 1911.

To the Honourable Ernest H. Armstrong, K. C., M. P. P.
Commissioner o Public Works and Mines:—

SIR:—I have the honour to submit herewith, the annual report on the mines of Nova Scotia for the fiscal year ended September 30th, 1911.

The following summary shows, so far as I have been able to learn, the Mineral production of Nova Scotia for the year ended September 30th, 1911, compared with that for the year ended September 30th, 1910.

Mineral.	Quantity. 1910	1911
Coal raised (gross tons)	5,477,146	6,280,444
*Iron ore (net tons)	52,640	53,595
Pig iron made (net tons)	341,674	397,615
Steel ingots made (net tons)	409,663	438,922
Limestone quarried (net tons)	483,100	525,286
Coke made (net tons)	493,167	545,619
Gypsum, quarried (gross tons)	322,974	297,641
Building stone quarried (net tons)	8,503	11,226
Bricks made	21,305,500	23,273,700
Drain pipe and tile made (feet)	974,819	1,431,761
Grindstone, quarried (net tons)	325	380
Gold bearing ore mined (net tons)	49,557	18,320
Gold produced (ounces)	10,675	8,389
Manganese ore (net tons)	25	150
Antimony concentrate (net tons)	203	191
Moulding sand (net tons)	180	380
Tungsten ore (net tons)	75	75
Sulphate of Ammonia	3,622	3,971

*Iron ore imported 1909-10, 705,351: 1910-11, 853,904 net tons.

During the Provincial Exhibition the Government's collection of economic minerals was again shown. The capacity of the building in which it is shown restricts its growth.

During the year, the removal of the Provincial Museum's collections to the Technical College was completed, and since the summer the museum has been re-opened to the public, and presents a good appearance. New oak table-cases were received, and the old ones were repaired and finished to match the new ones. The work of over-hauling and more thoroughly arranging and labelling the collections is still in progress. The Museum continues to grow at a rapid rate with Nova Scotian specimens, and all the additional space in the new rooms is filled, although more foreign material has been packed to go into storage.

The Science Library is rapidly increasing through its exchanges, but no grant is available for the purchase of new manuals and treatises. The Library is now in good order, but needs binding. It is largely used by students and others.

Besides his duties in the Museum and Library, Mr. Piers has continued his work connected with the Provincial Public Records, and assisting those that consult them.

The demand for departmental drills has not been so large as that of last year. Details of the drilling done in 1911 and also details of the Metalliferous Mines, will be found in Mr. Picking's report.

I regret to record the death of Mr. Patrick Neville, one of the Deputy Inspectors of the Province, which occurred on August 1st of last year. Mr. Neville was appointed a deputy inspector in 1883 and continued his duties down to the time of his death. The Government has lost in him a most trusted and valuable servant whose wide information and clear judgment, in all matters relating to coal mining in this province, will be greatly missed.

ERRATA.

In table on page 12 the figures for gross tons coal raised in 1911 should be 6,208,444.

Statement of Mines Office revenue for fiscal year ended September 30th, 1911.

SOURCE	1ST QUARTER	2D QUARTER	3D QUARTER	4TH QUARTER	TOTAL
Prospecting License Apps.	$ 596 50	611 00	1165 00	1665 50	4038 00
Lease Applications, (Gold and Silver)	378 00	112 00	910 00	1062 00	2462 00
Rentals (Gold and Silver)	....	5 50	1081 50	9468 00	10555 00
License-to-Search Apps	960 00	1410 00	870 00	1710 00	4950 00
Lease Apps. (other than Gold and Silver	250 00	100 00	450 00	250 00	1050 00
Rentals (other than Gold and Silver)	....	... .	10950 00	18840 00	29790 00
Gold Royalty	424 46	406 08	421 89	1035 02	2287 45
Coal Royalty	173017 38	146287 51	98822 52	173429 25	591556 66
	$175626 34	148932 09	114670 91	207459 77	646689 11
Fees for year					917 00
					$647606 11

COAL TRADE

The returns of coal sold during the year 1911 show, compared with the returns for 1910, as follows :

	1910	1911
Nova Scotia	1,806,999	2,108,665¾
New Brunswick	530,614	541,591
Newfoundland	176,986	184,195¼
Prince Edward Island	79,492	80,637
Quebec	1,786,948	2,067,831½
United States	290,668	332,301
St. Pierre	7,504	9,024½
Bunker	217,685	204,681
Time Charter Boats		25,545
Other Countries		1,992
Tons	4,896,896	5,556,464

CAPE BRETON COUNTY.

The production for the fiscal year 1911 was 4,736,026 tons as compared with 4,205,131 tons for the year 1910.

The largest producers were the Dominion Coal Co., Ltd., with an out-put of 3,892,958 tons, and the Nova Scotia Steel & Coal Co., Ltd.,with an output of 751,823 tons.

The reports of Mr. Neil A. Nicholson, and Mr. John J. McNeil, Deputy Inspectors for the district of Cape Breton, give details of the condition of the collieries in their district.

PICTOU COUNTY.

The production for the fiscal year 1911 was 727,944 tons as compared with 630,049 tons for the year 1910.

The principal producer was the Acadia Coal Co., Ltd., with an output of 466,337 tons.

The report of Mr. Thomas Blackwood, Deputy Inspector for the Pictou District, gives details of the condition of the collieries in his district.

CUMBERLAND COUNTY.

The production for the fiscal year 1911 was 411,695 tons as compared with 277,862 for 1910.

The principal producer was the Dominion Coal Co., Ltd., Lessees of the Cumberland Railway & Coal Co., with an output of 191,849 tons.

The labour trouble which had most seriously interfered with the output of the Cumberland Railway & Coal Co's. mines since August 10th, 1909, was adjusted about June 1st of this year. While a marked improvement immediately took place, the daily out-put at the end of the year was still below its former average.

The report Mr. A. V. Cameron, Deputy Inspector for the Cumberland District, gives details of the conditon of the collieries in his district.

INVERNESS COUNTY.

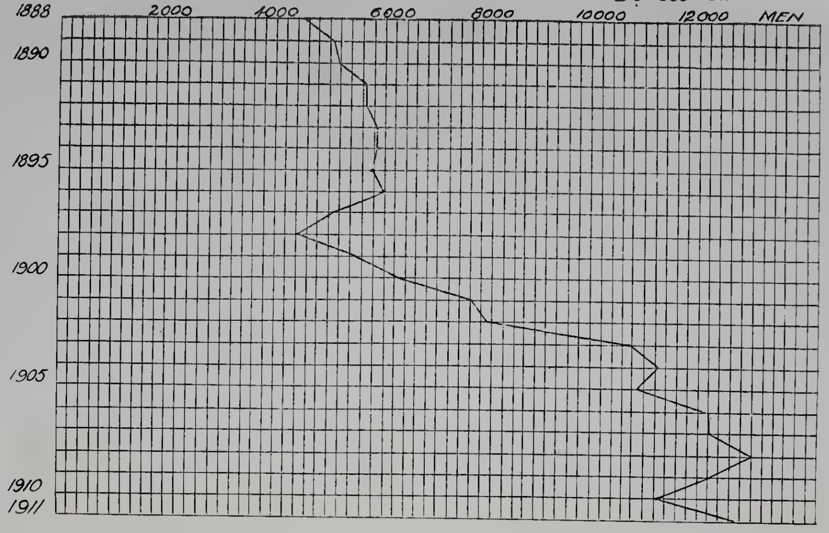
The production for the fiscal year 1911 was 332,779 tons as compared with 364,104 for 1910.

The principal producer was the Inverness Railway & Coal Co. with an output of 291,587 tons.

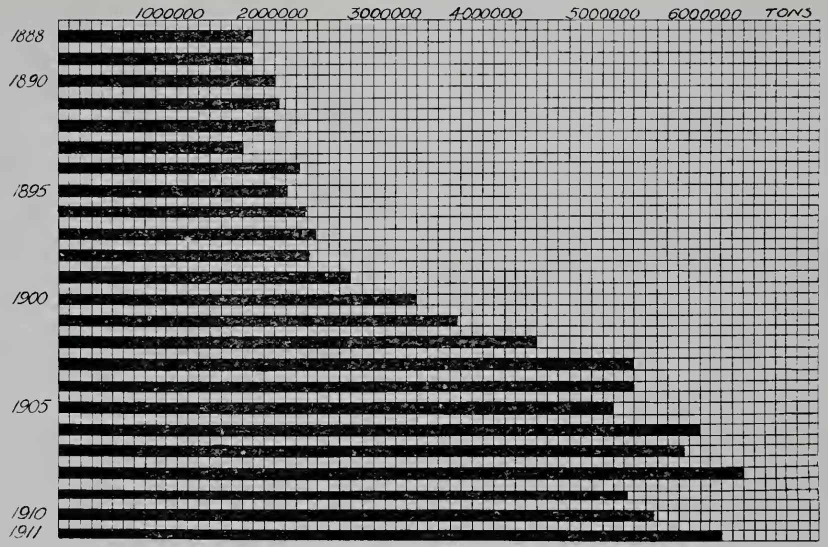
Production ceased at the colliery of the Port Hood-Richmond Coal Co., on June 23d 1911: a feeder of salt water suddenly making its appearance through a cover of 942 feet and flooding the mine.

The report of Mr. W. F. Davis, Deputy Inspector for the district of Inverness, gives details of the condition of the collieries in his district.

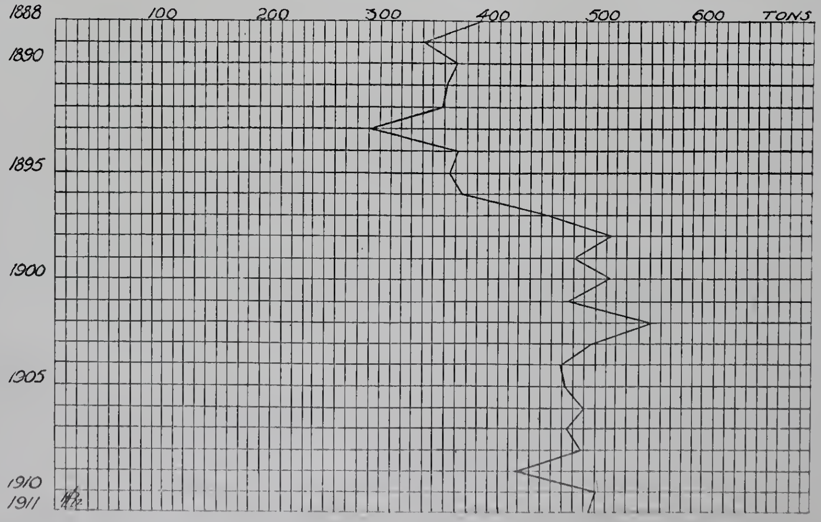
MEN EMPLOYED NOVA SCOTIA COAL MINES 1888-1911



PRODUCTION OF COAL IN NOVA SCOTIA 1888-1911



OUTPUT IN TONS PER MAN PER YEAR 1888 - 1911



REPORTS OF DEPUTY INSPECTORS

Glace Bay N.S., October, 20, 1911.

Hiram Donkin, Esq.,
Deputy Commissioner Public Works & Mines, Halifax, N. S.

Dear Sir:—I beg leave to submit to you the report on the coal mines in the southern district of Cape Breton, for the fiscal year ended September 30th, 1911.

Dominion No. 2 Colliery.

Owned and Operated by The Dominion Coal Co. Ltd.

This mine is at Glace Bay in the county of Cape Breton.

The bank-head is of steel and is 140 feet high with 12 feet pulleys, and covered with corrugated iron. The bank is equipped with storage tank, four distributing belts, four picking belts, two loading belts and two shaker screens; these are driven by a 115 h. p. motor in units of 75 and 40.

The power house is steel frame with brick walls and 2 inches by 3 inches matched-spruce roof.

The hoisting-engine houses are steel frame, brick and concrete walls and concrete roof.

This colliery is operated on the Phalen seam which has a thickness of seven feet and a pitch of 4 to 5 degrees.

Main Coal Shaft.—

From face to face of concrete	11 by 38 feet.
Depth from surface to bottom of sump	907 feet.
Depth from center of pulleys to surface	137 feet.

Phalen coal shaft. Two compartments.

From face to face of timber (each)	10 by 7½ feet.
Depth from surface to bottom of sump	907 feet.
Depth from center of pulleys to surface	137 feet.

Phalen main shaft. Two compartments.

From face to face of timber (each)	10 by 7½ feet.
Depth from surface to bottom of sump	870 feet.
Depth from center of pulleys to surface	80 feet.

The method of working is bord-and-pillar. The condition of the traveling roads is good. The haulage is motor, plane-rope, and horse-haulage. The condition of the haulage roads is good. The quantity of air in circulation is 226,000 cubic feet a minute, distributed in five splits. The ventilating current is produced by a 24 by 9 feet Dixon fan. The dimensions of the fan drift, 15 by 14 feet and of the fan-shaft, 11 by 15 feet.

Ackroyd & Best safety lamps are used (in use 827) (idle 1231).

The average quantity of water pumped daily is 105,000 gallons.

The following tables give a description of the air and water pipes, and also the number of feet of each :—

LOW PRESSURE LINES.

10 inch	8 inch	6 inch	4 inch	2 inch	1½ inch
350 feet	8200 feet	12800 feet	1130 feet	22000 feet	15400 feet

HIGH PRESSURE LINES.

5 inch	4 inch	3 inch
400 feet	6500 feet	400 feet

WATER LINES.

5 inch	4 inch	3 inch	2 inch	1½ inch
2900 feet	4200 feet	4200 feet	5200 feet	600 feet

PUMPS, DISCHARGE AND SUCTION LINES.

8 inch	500 feet
6 inch	700 feet
4 inch	400 feet
3 inch	2500 feet
2 inch	1900 feet

The mine is inclined to be dusty, but it is always well watered. In the winter season the mine is watered twice a week ; and in the summer season, once a week. The method of watering is by pipe, hose or water-box.

New fan and air drifts are being built, and a new fan is to be placed which will be capable of supplying No. 2 and 9 collieries with sufficient air. This is an emergency fan and can be used in case of accident to either 2 or 9 fan.

The general condition of the mine is very good.

Number of men employed is as follows:—

Allan's Headway	28	men
South "	222	"
" level	104	"
North "	154	"
" deeps	124	"

The officials are:—

Alex. S. McNeil, manager.

Dan H. McLean, underground manager.

John Murphy, north side overman.

Michael Steel, " "

Alex. McVicar, " "

Wm. S. MacDonald, south side overman.

Ronald H. MacDonald, " "

John A. Ferguson, chief engineer.

Neil B. MacDonald, assistant engineer.

Frank J. Aldred, assistant engineer.

TEMPERATURE AND BAROMETIC PRESSURE.

		Barometer	Thermometer
October	1910	29.99 inches	50.9 degrees
November	"	29.81 inches	44.5 degrees
December	"	29.68 inches	33.8 degrees
January	1911	29.79 inches	30.3 degrees
February	"	29.75 inches	24. degrees
March	"	29.75 inches	30.6 degrees
April	"	29.93 inches	38.6 degrees
May	"	29.9 inches	47. degrees
June	"	29,97 inches	59.5 degrees
July	"	30.00 inches	59.5 degrees
August	"	30.00 inches	60. degrees
September	"	30.07 inches	59.5 degrees

The steam generating plant is made up as follows:—

Sixteen 318 h. p. boilers, Babcock & Wilcox, with underfeed stokers.

Four 318 h. p. boilers, Babcock & Wilcox with Parson's blowers.

Two 8 feet draft-fans driven by Sturtivant engine, 8 by 10 inches.

One 8 foot draft-fan driven by Robb engine, 10 by 10 inches.

One drip return pump, size 7½ by 5 by 6 inches.

Two centifugal circulating pumps, 3000 gallons a minute, driven by a 45 h. p., motor.

One duplex air pump, 16 by 34 inches, driven by 35 h. p. motor.

The Surface Machinery includes:—

One Dixon hoisting-engine 34 by 48 inches, double conical drum, size 18 by 12 feet, diameter and width 5 feet.

One Dixon man-engine, 24 by 42 inches, with double conical drum, 18 by 12 feet diameter, width 5 feet.

Two fan engines, Dixon-Corliss, 20 by 42 inches.

One exhaust turbine-engine 1000 killowatts, 1500 revolutions.

One motor, 20 h. p. 710 revolutions, running loading belts.

One motor, 75 h. p. 480 revolutions, running screen and picking belts.

One Walker air-compressor, steam end 31 by 57 by 60 inches. air end 51 by 32 by 60; capacity, 6300 cubic feet a minute.

3 Rand air compressors.—steam end 20 by 36 by 48 inches air end 32 by 20 by 48 inches, capacity 3000 cubic feet a minute.

2 Norwalk high pressure compressors—steam end 20 by 38 by 36 inches, air end 23 by 16 by 8 by 36 inches, capacity 1380 cubic feet a minute.

3 Goldie electric engines—20 by 40 by 36 inches, capacity 550 killowatts

2 Ideal electric engines—12 by 12 inches, capacity 75 killowatts.

1 Worthington duplex pump—14 by 12 by 10 inches, 800 gallons a minute

1 Smithdale duplex pump—16 by 12 by 12 inches, 800 gallons a minute.

The ropes in the coal shafts and main shafts are 1⅝inch.

The Underground machinery includes :—

Two Jencks engines, 8 by 12 inches.
One Flory engine 14 by 20 inches.
One Jencks engine, 12 by 15 inches.
One Jencks engine, 9 by 12 inches.
One Flory engine, 9 by 10 inches.
One Jencks engine, 5 by 12 inches.
Two Flory engines, 10 by 15 inches.
Two Baldwin air locomotives, 20 ton each, 11 by 14 inches.
One " " " 17 " 9 by 14 "
Three " " " 17 " 10½ by 14 "
One Porter " " 10 " 7 by 14 "
" " " " 7 " 7 by 12 "

One Northey pump, 20¼ by 8 by 24 inches.
One Cameron (pot valve) 7 by 5 by 12 inches.
Two Northey, 7½ by 4½ by 10 inches.
One Cameron, 7 by 4 by 12 inches.

The ropes in use in this mine are as follows :—

3100 feet ¾ inch
2800 feet ¾ inch
2700 feet ¾ inch
1700 feet ¾ inch

900 feet ⅝ inch
1500 feet ⅝ inch
2000 feet ⅝ inch
2000 feet ⅝ inch

5000 feet ⅞

The fire-fighting apparatus is very good and the brigade is well trained.

The apparatus includes :—

2000 feet rubber hose.
5 branch pipes.
1 duplex fire-pump, 14 by 7 by 12 inches.
7 hydrants in and around yard, (town pressure)
12 ladders from 15 to 25 feet long.

The powder used during the year was Monobel. The quantity used was 7150 ℔. All the blasting was done by electricity and for this, were used 11985 detonators.

Table of Development Work :—

	Main	Back	High	Low
No. 2. north deeps......	970 feet	983 feet.	......	......
No. 1. north deeps....	1390 feet	155 feet.	......	......
North motor road............		......	972 feet	900 feet
South level..................		......	260 feet	250 feet

Table of timber, ties, booms and props:—

TIES.

Length	Face	Thickness	Number
5 feet	5 inches	4 inches	21,315
6 feet	6 inches	5 inches	4,927
Total:—			26,242

BOOMS			PROPS		
Length	Size	Number	Length	Size	Number
14 feet	6 inches	774			
16 "	6 "	612	9 feet	5 inches	19,592
14 "	8 "	143	8½ "	5 "	170,601
16 "	8 "	128			
17 "	8 "	155			
18 "	8 "	128			
20 "	8 "	64			
15 "	8 "	109			
Totals:—		2113			190193

Rails in Mine.

60 ℔.	56 ℔.	45 ℔.	30 ℔.	18 ℔.
4600	41200	14,600	4000	130,900

Dominion No. 3 Colliery.

This mine is on the Phalen seam, and is owned and operated by the Dominion Coal Co., Limited. The pitch of the seam is 4 degrees 30 minutes.

The bankhead is of wood, and is equipped with an up-to-date screening plant. The mine is entered by means of slopes driven from the out crop of the seam to the barrier separating Dominion No. 2 mine from this mine. The slope is 9563 feet long and has an average width of 12 feet: average pitch 4 degrees. The slopes are kept in good condition.

The seam is worked on the bord-and-pillar system: the coal from rooms and narrow work is mined by machines, and the coal from the pillars is mined by hand.

The developing work in this mine was all finished last year, except the two bottom levels off the slope, and the headways to be turned off these levels. These levels are numbered 19 east and 19 west and have been driven 600 feet. A headway has been turned off 19 east level, and was driven 300 feet.

The west back-slope is kept in good condition for a traveling slope: the main slope is the haulage slope and is double tracked. The coal is taken from the landings under-ground to the tipple on the bank-head by endless haulage. There are 28000 feet of 1 ⅛ inch wire-rope in use for this purpose.

There are 82,000 cubic feet of air in circulation, a minute produced by a Capell fan 13½ by 7½ feet directly connected to a 18 by 18 inch Chandler-Taylor engine, and has a water guage of 2.4. inches. The air is split at the bottom of the slope, 40,000 cubic feet going to the west side, and 42000 cubic feet going to the east side. The fan is placed over the shaft: the shaft is 30 feet deep and has an area of 100 square feet.

The Ackroyd & Best safety lamps are used: average number in use daily 182. There are 350 of these lamps kept in readiness.

The quantity of water pumped daily is 284000 gallons. Compressed air for mining machines and pumps, is conveyed to the mine through pipes of which the following are the diameters and lengths of the different kinds in use.

Air lines.

Diameter......8inches, length in feet.........13000
" ...4 " " " " 2000
" ....2 " " " " 3300
" ....1½" " " " 4000

Water lines.

Diameter...6 inches, (length) in feet...........1300

This mine is fairly damp, no sprinkling is necessary. The air-pipe coming into the mine is connected at surface with the main water supply, and can be used as a means of fighting fire in the mine.

There are standard hose connections along all the main air lines 500 feet apart. The stables, under ground, and all the landings are supplied with fire-kings and are examined daily and kept in readiness for use.

Surface Machinery.

Steam generating plant consists of the following:—

Three B. & W. boilers, 318 h. p. each.

One Mumford boiler, 100 h. p.

One Mumford boiler, 90 h. p.

One Walker compressor, capacity 6000 cubic feet a minute, steam h. p. cylinder, 31 inches l. p. steam, 57 inches, air h. p. cylinder, 32 inches l. p. air, 51 inches, stroke 60 inches.

Haulage engine 22 by 42 inches.

Screen engine 12 by 34 inches.

Fan 13½ by 7½ feet.

Fan engine 18 by 18 inches.

Size of haulage rope 1⅛ inch, 28000 feet in use.

The fire fighting apparatus consists of one hose cart and 1500 feet of 2-inch standard hose, with hydrants at convenient points surrounding the plant: also fire-kings in all colliery buildings. This colliery has an organized fire brigade.

Average temperature for each month on the surface and in the mine:

1910-1911	SURFACE	MINE
October	50 degrees	56 degrees
November	36 degrees	57 degrees
December	29 degrees	57 degrees
January	17 degrees	56 degrees
February	10 degrees	56 degrees
March	16 degrees	57 degrees
April	26 degrees	56 degrees
May	44 degrees	55 degrees
June	68 degrees	57 degrees
July	79 degrees	57 degrees
August	72 degrees	57 degrees
September	58 degrees	52 degrees

Officers.

Neil A. McDonald, manager.

J. R. McNeil, underground manager.

James Mosely, overman.

Dan McLeod, overman.

Joseph Mann, overman.

R. J. Wilton, chief engineer.

There are 181 men and 2 boys employed underground; and 56 men and 2 boys on the surface.

Rails in use.

Weight a yard.	Lineal feet
56 pound	8000
30 pound	17625
18 pound	24870

Underground Machinery.

Consists of a Westinghouse motor, directly connected to haulage gear and is at No. 7 landing, hauling the coal by endless rope to the main haulage. Since the burning of the transformer-house, this engine has been idle, and the transfer haulage-rope was connected to the main haulage-rope.

A 7 by 14 by 12 inch pump has been placed in a large lodgment below No 19 levels; and is handling all the water the mine is making, pumping into No. 4 mine.

The production last year was 196,111 tons, to produce this 19,735 pounds of Monobel powder were used, or 9.93 tons of coal mined for each pound of powder.

DOMINION NO. 4 COLLIERY.

Dominion No. 4 colliery is situated at Caledonia in the county of Cape Breton. It is owned and operated by the Dominion Coal Company, Limited.

The bankhead is of steel, and is 96 feet long and 40 teet wide with 3 floors. There are two shaker-screens and two picking-belts from which the cars are loaded.

The colliery buildings are as follows:

Compressor house.

Fan house.

Hoisting-engine house.

These houses are all attached and are 146 feet long and 80 feet wide, built of concrete.

The boiler house is 96 feet by 58 feet: of brick.

Endless-haulage house 38 by 41, wood: wash house 55 by 39 feet, wood.

The seam is 7 feet thick and has a pitch of 5 degrees.

The shaft is rectangular, 18 by 10 feet and 180 feet deep.

The method of work is bord-and-pillar. The coal in rooms and narrow work is mined by machines and the coal from pillars is mined by hand.

The following is the distance driven in narrow work during last year :

East deeps each	500 feet.	
No. 6 east levels	300 feet.	
No. 8 east levels	400 feet.	
No. 9 east levels	500 feet.	
No. 10 west levels	100 feet.	
Headways off No. 8 east level	500 feet.	
Headways off No. 9 east level	500 feet.	
West deeps each	250 feet	driven to barrier.
No. 9 east levels off west deep	500 feet	driven to barrier.
No. 10 west level off west deep	150 feet	driven to barrier.
No. 7 east levels off west deep	100 feet	driven to barrier.
No. 8 east levels off west deep	700 feet	driven to barrier.

The traveling ways at this colliery are kept in good condition.

The haulage on all the main deeps and levels is done by endless rope. The haulage roads are kept in good condition. Main-and-tail rope haulage is on two of the long levels hauling the coal to the endless haulage. The colliery has also a self-acting incline working by gravitation lowering the coal to the endless haulage, and supplying the landings off the incline with empty cars.

The quantity of air in circulation at this mine is 95000 cubic feet a minute, produced by a Murphy fan 14 by 6 feet. The drift for the fan has an area of 90 feet and is 35 feet long: the water guage is 2.5 inches. The air current is split at the bottom of the air-shaft, 50,000 cubic feet going to the east side and 45,000 going to the west side. This air is further split about 3000 feet from the shaft bottom, and ventilates the west level section. The east-side air is again split at No. 8 west level and ventilates No. 8 section and returns by way of the coal shaft. The lower split ventilates all the workings below No. 8, and returns by way of the air shaft at Boutlier's shore.

There are 596 Ackroyd & Best safety lamps in use, out of a total of 820.

The air-pipe into the mine is 8 inches in diameter and has branch lines from 6 inches to 1½ inch. These air-lines can be converted into a water-line when required for sprinkling, or in the case of fire in the mine.

The mine is fairly damp, except in few places. Care is exercised in getting all the coal filled from along the roads, and the places are watered when considered necessary. The average barometer reading in the mine for the year was 30.40 inches, and the average temperature 56 degrees. The number of men employed in each section of the mine is as follows:

West deep section	284 men.
East deep section	260
On surface	95
Officials	26
Total	645

The output was as follows:—Rooms and narrow work 230,819 tons; and from pillars 166666 making a total tonnage of 397,485 tons. To produce this output there were 4168 pounds of Monobel powder used; and 45005 pounds of bull-dog powder; making a total of 49173 pounds of explosives: 8.04 tons of coal for each pound of explosive used.

Rails in mine.

33600 feet, 45 lb.

14900 feet, 30 lb.

64925 feet, 18 lb.

Air pipe and Water Pipe in use.

Diameter in inches.	Length in feet.
8	14,400
6	1,600
4	17,600
1½	8,324

Surface Machinery.

One hoisting engine 20 by 48 inches.

One man-engine 18 by 24 inches.

One pumping-station engine 20 by 42 inches.

One lamp-cabin engine 4 by 6 inches.

One box-car-loader engine 10 by 14 inchos.

One engine 22 by 42.

One compressor, steam cylinder 20 by 36 by 48, air 20 by 32 by 48 inches.

One compressor, steam cylinder 22 by 38 by 48, air 22 by 36 by 48 inches.

One fire pump 14 by 9 by 12 inches.

Two feed pumps 7½ by 4½ by 10 inches.

One small engine (machine shop) 4 by 6 inches.

One saw-mill engine 8 by 24 inches.

One Dixon fan-engine 18 by 36 inches.

One Murphy fan-engine 11 by 20 inches.

One screen engine 12 by 34 inches.

Seven batteries of B. and W. boilers 1773 h. p. Three tubular boilers at pumping station, 225 h. p.

Underground Machinery.

Two small main-and-tail-rope engines. One McDougall turbine-pump, capacity 420 gallons a minute. One Aldrich five-throw pump, capacity 600 gallons. One Guynne pump 250 gallons a minute. These pumps are operated by electricity.

One Cameron pump, capacity 300 gallons a minute.

Four small Knowles pumps.

One small Northey pump. These are operated by compressed air.

The average quantity of water pumped daily from this mine is 1,148,320 gallons.

Officers.

John Casey, manager.

Alex. Matheson, underground manager.

Richard Dinn, assistant underground manager.

Andrew Lynk, overman.

Angus McKeigan, overman.

J. H. Morrison, chief engineer.

DOMINION NO. 5 COLLIERY.

Dominion No. 5 colliery, county of Cape Breton, is owned and operated by the Dominion Coal Company, Limited.

The bank-head at this colliery is of wood. The screening plant is of the latest pattern, consisting of four sets of shaker-screens, having three screens to a set.

A two-inch screen, under which is a 1½-inch screen; and lastly a ¾ inch screen. The coal is conveyed from the screen by picking belts: each about 40 feet long; and is delivered to two loading belts from which the cars are filled.

This machinery is electrically driven: power being conveyed from No. 2 colliery at a voltage of 6600, which is transformed here to 550 and 110 volts for motors and lighting purposes.

This mine is on the Phalen seam: the average thickness of the seam is 7¾ feet, and has a pitch of 4 degrees 30 minutes.

The coal is taken from the mine by means of slopes starting from the outcrop and driven through the coal, a distance of 1100 feet to the barrier separating Dominion No. 2 mine from this mine. The slope is 14 feet wide and has a pitch of 4 degrees, 30 minutes.

The seam is worked on the bord-and-pillar system: rooms 20 feet wide, pillars 30 to 40 feet wide, according to cover: the coal in the rooms and narrow work is all mined by machines; and the coal from pillars is mined by hand.

The following is the distance driven in narrow places.

No. 11 north level 800 feet, driven to barrier, total distance 1800 feet.

No. 11 south level 150 feet, driven to barrier, total distance 1300 feet.

No. 11 north level was driven to the barrier separating Dominion No. 1 colliery from this. No. 11 south was driven to the barrier separating Dominion No. 3 colliery from this colliery.

All the rooms on No. 11 south have been driven to the barrier and the pillars started back. The rooms in No. 10, north section, have also been driven to the barrier and pillars started back. The pillars on No. 7 north and No. 9 south have been drawn very successfully against the slope barrier: also all the pillars in the east slope from No. 9 to No. 5, with the exception of the slope pillars from No. 7 to No. 5. These pillars are left in to protect the airway from the East slope to the French slope. The traveling slopes at this colliery are kept in good condition. The endless haulage-system takes the coal from No. 9 landing to the surface, a distance of 9000 feet from No. 9 to the bottom levels. The haulage is the trip system with plain rope. The haulage roads are kept in good condition.

The quantity of air in circulation is 190,000 cubic feet a minute, produced by two fans, a Guibal 24 feet diameter and a Chaneller 15 feet diameter. The fan-drift to the Guibal fan has an area of 105 square feet: length of drift 35 feet. Chaneller fan-drift has an area of 100 feet. The water guage for the Guibal is 6/10 of an inch; and for the Chaneller 1.4 inch. The Guibal fan is connected by transmission ropes 112 feet in length: the wheel on the fan is 12 feet: on the engine 5 feet. The Chaneller fan is connected direct to the engine.

Employees.

Hand pick miners	120
Machine miners	14
Shearers	2
Machine helpers	16
Loaders	28
Day laborers	130
On surface	65
Total	375

The Ackroyd & Best safety lamps are in use. There are 392 of these lamps used. There are 100 spare and in good condition.

Surface Machinery.

One Corliss haulage-engine 28 by 60 inches.

One Atlas haulage-engine 16 by 22 inches.

One Atlas haulage-engine 9 by 14 inches.

One Rob-Armstrong engine 18 by 22 inches.

Two Rand compressors, capacity each, 2500 cubic feet a minute.

One Walker compressor capacity 2500 cubic feet a minute.

Northey duplex pump (fire pump) 14 by 7 by 12 inches.

Knowles pump 14 by 8½ by 12 inches.

Seven B. & W. boilers 1874 h. p. with Parson forced draft, fed with two Knowles duplex out-side-packed plunger pumps 10 by 6 by 12 inches.

Underground machinery.

One Cameron pump 14 by 7 by 18 inches.

One Cameron pump 14 by 9 by 33 inches.

One Knowles pump 16 by 7 by 10 inches.

Two turbine pumps operated by electricity.

One main-and-tail rope engine 14 by 20 inches.

One Flory engine 14 by 20 inches.

Rails in use.

56,000 feet 56 lb.
10,000 feet 30 lb.
50,400 feet 18 lb.

The production for the year was 338,102 tons. To produce this, 21,386 lb. of bull-dog powder were used and 9023 lb. of monobel powder, 11 tons for each pound of powder used.

Officers.

W. G. Ross, manager.

J. A. McDonald, underground manager.

Mark Petrie, overman.

David Gouthro, overman.

Thomas Hickey, chief engineer.

DOMINION NO 6.

This mine is on the Phalen seam near McRae's point on the southern side of Glace Bay, in the county of Cape Breton. It is owned and operated by the Dominion Coal Co., limited.

The bank-head is of wood, of modern design; and the coal handling is almost automatic. It is lighted by electricity and fitted throughout with standard pipe and hose for fire protection. The full cars are hauled to the tipple by an automatic car-haul. The coal passes from the tipple to the shaking-screens, from which it is fed to two picking belts. These belts are 45 feet long and 5 feet wide, speeded to 43 feet a minute. The slowness of their motion and their general design are such that the coal can be handled easily with a minimum of breakage.

The Colliery buildings are:

	LENGTH.	WIDTH.	Height.
Boiler house	167 ft. 5 in.	43 ft. 10 in.	21 ft. 10 in.
Compressor house	93 ft.	65 ft.	30 ft.
Lamp house	33 ft. 8 in.	15 ft. 8 in.	9 ft.
Ware house	48 ft. 6 in.	30 ft.	17 ft.
Pump station	34 ft.	25 ft.	15 ft.
Wash house	60 ft.	30 ft.	12 ft.
Machine shop	48 ft. 6 in.	65 ft.	30 ft.

The seam is entered by means of slopes, driven from the out crop, and are down 4100 feet, 12 feet wide, and 11 feet high, having a pitch of 7 degrees. This mine is worked on the bord-and-pillar system. In the land area, the rooms are 20 feet wide and the pillars 15 feet thick. The under-sea rooms are 20 feet wide, and pillars 30 feet according to the thickness of the cover: the coal in the rooms is mined by machines.

The following is the distance driven in narrow work for the last year:—

Main deep	800 feet.
Back deep	820 feet.
No. 4 west high level	310 feet.
No. 4 west low	320 feet.
No. 5 west high	920 feet.
No. 5 west low	910 feet.
No. 6 high level	940 feet.
No. 6 low	900 feet.
No. 7 high	320 feet.
No. 7 low	320 feet.

The traveling ways are in good condition. The haulage on the main slope is direct with a one inch rope, 20 cars to a trip.

There are 52,000 cubic feet of air a minute in circulation one current-water gauge .7 of an inch.

Employees.

Machine men	46
Helpers	46
Hand picks	2
Shooters and loaders	70
Pit labourers	112
Surface	61
Total	337

Surface Machinery.

One Jenckes engine 26 by 58 inches.

Two Walker compressors, capacity 3500 cubic feet a minute each.

Six B. & W. boilers 1500. h. p. fitted with Parson's forced-draft blowers.

One Knowles pump, capacity 500 gallons a minute, for fire purposes.

Under-Ground-Machinery.

One Cameron pump 16 by 8½ by 33 inches. One Northey duplex pump 30 by 8 by 24 inches. Pumps driven by compressed air. Average quantity of water pumped a day, 268,000 gallons.

Rails in mine.

Weight a yard.	Feet
30 lb	12000
18 lb	80000

Officers.

G. J. Mitchell, manager.

Henry Wilson, under-ground manager.

James McCuish, overman.

James Smith, chief engineer.

No. 7 Colliery.

This Mine is in the Hub seam : the top seam in the Glace Bay basin. It is owned and operated by the Dominion Coal Co., Limited.

The Bank-head is of hard pine: length 120 feet: width 3 feet. single boarded and battened, with tar-roof.

Bank-head Machinery.

One man-cage.

Two dumping coal-hoisting cages. Duplicate weight scales.

Two conveyor belts: length, 14 feet, width 3 feet.

Two sets of shaking screens, 3 to a set.

Two picking belts: length, 41 feet, width 5 feet.

One loading belt: length, 35 feet, width 3 feet, 6 inches;

All bank machinery is electrically driven.

Two 12 h. p. Allis Chalmers Bullock, motors.

One 75 h. p. Allis Chalmers Bullock motor. Man-cage pulleys, 6 feet in diameter: coal hoisting pulleys 12 feet diameter.

Colliery Buildings.

Engine house 80 by 35 feet, wooden posts, galvanized mettle cover.

Fan-engine house, 25 by 10 feet, wooden posts, galvanized iron cover.

Boiler-house, 65 by 50 feet, steel post, with brick walls, galvanized iron roof.

Fire-pump house, 20 by 10 feet, brick walls, galvanized, iron roof.

Blacksmiths' shop, 35 by 30 feet, wooden post, single boarded and battened tar roof.

Banking station engine-house, 35 by 30 feet, wooden post, covered with galvanized iron.

Carpenter shop, same as blacksmiths' shop.

Ware-house, 50 by 30 feet, wooden post, single boarded and shingled.

Lamp-cabin, 35 by 15 feet, wooden post, tar roof.

Wash-house, 80 by 18 feet, wooden post, boarded and shingled.

Fan-house, 42 by 27 feet at one end and 13 feet at the other end, cement walls, wood and tar roof.

The Fan-house is alongside the air-shaft: the drift being a continuation of the same building.

The seam is 9 feet thick with a stone parting of considerable thickness.

The hoisting shaft is 126 feet deep, 20 by 10 feet. The man-cage runs in a compartment of the coal-shaft, 10½ feet by 6 feet.

Deeps.

Deep 7550 feet long, 12 feet wide: the condition of deeps is fairly good. General pitch of seam is from 3 to 4 degrees.

Rooms are 20 feet wide, pillars are from 30 to 38 feet according to cover.

Method of timbering is booms throughout. In narrow places, the booms are hitched in the rib. In the rooms, one end is hitched, and an upright prop under the other end, sometimes props under both ends. Stoppings are of cement, boards and brattice cloth.

Development Work.

No. 2 south levels, 175 feet, driven to cover line.

No. 3 south levels, 400 feet.

2d set of headways off No. 3 south, 249 feet.

3d set of headways off No. 3 south, 110 feet.

No. 3, north levels 399 feet.

5th set of headways off No. 3, north, 415 feet.

6th set of headways off No. 3, north, 132 feet.

No. 4 north levels 1076 feet.

Ist set of headways off No. 4 north, 190 feet driven to barrier.

2d set of headways off No, 4 north, 225 feet driven to barrier.

One set of deeps off No. 4 north level 400 feet.

No. 4 south levels, 570 feet worked on stone parting.

1st set of headway off No. 4, south, 51 feet.

No. 5 south levels, 118 feet, worked on stone parting.

No. 5 north levels, 178 feet, worked on stone parting.

Main deeps, 538 feet, worked on stone parting.

Endless haulage on main deeps: horse haulage on levels and in the rooms. Condition of haulage ways is fairly good. There are 60,000 cubic feet of air a minute in circulation. There is one Capell-fan, 12 feet in diameter, and 11 feet, 6 inches wide. The air is divided twice, 35,000 cubic feet going north, and 25,000 cubic feet going south.

Size of fan-drift, 19 feet long, 12 by 10 feet. Fan-shaft, 9 feet diameter. There are 394 Ackroyd & Best safety lamps in use.

The average quantity of water pumped daily is 400,000 gallons. There is an 8 inch air pipe which extends from the surface down the air-shaft, and down the deeps to No. 4 levels. There is a 4 inch air pipe at each set of levels and extending along the levels. The headways and rooms are piped with 1½ inch air-pipe.

There is a 4 inch water-pipe from surface around pit bottom and down to stables, and is connected with air-pipe.

The mine is damp and does not require sprinkling. There are two dams in the mine. One 6 feet high, by 14 inches thick, near the shore where the mine was flooded at the time of the fire: both these dams are built of concrete.

The mine is practically free from gas and oiled brattice cloth is used.

The cars hold two tons. Weight of empty car is 1500 lb. Working-load in shaft is one box at a time, of two tons capacity.

The safety hooks are between tackling chain and rope-hinge and have worked very satisfactorily.

There is one air crossing 60 feet long, 10 by 6 feet high, haulage deep and south back-deep: 18-inch steel beams run lengthwise along the side of the air crossing. These are bricked in. The floor is of 1¼ groove-and-tongued planks, laid lengthwise on 2 by 4 inch cross pieces, which rest on the beams. At one end of the crossing there is a concrete pillar two feet thick: the pillar is left entirely between the two ends. There are two 14 inch hard-pine booms spanning these pillars.

The general condition of the mine is good. There are 175 men in the north section and 125 men in the south section.

Officers :—

There are 20 officials including examiners and shot lighters. The average water gauge is 1.4 inch. Thermometer 42 degrees. Barometer 29.6 inches.

The Thermometer in return airway average 54 degrees.

The Barometer in return airway average 30.18 inches.

Steam generating plant is as follows :—

Two 250 h. p. B. and W. water-tube boilers.
Two 212 h. p. B. and W. water-tube boilers.

Surface Machinery.

Coal hoisting-engine, Jenckes, 54 by 42 inches, first motion, corliss valve, diameter of drum 8 feet, 6 inches.

Man-cage engine, 18 by 36 inches: Matheson & Co., first motion : diameter of drum, 6 feet.

Two Norwalk compressors, compound, steam end 20 by 34 inches : air end 19 by 30 inches, capacity 2000 feet a minute.

Fan engine 12 by 15 inches, Robb-Armstrong 100 h. p.

Banking-station engine, first motion, loose drum, made up as follows :—Right hand engine a Jenckes, 18 by 36 inches. Left-hand engine : Matheson & Co., 18 by 36 inches.

One feed pump, 7½ by 4½ by 10 inches : one duplex Knowles fire-pump, 14 by 7½ by 12 inches : capacity 500 gallons a minute. One Northy duplex circulating pump, 5½ by 3½ by 6 inches. One vacuum feed-water heater.

One Wagner electric Co., ½ h. p. motor : one Canadian Electric Mfg. Co., motor 2½ h. p.

There is a complete fire protection system at this Colliery. There are 4 hydrants at convenient stations on the surface. Bank building is all piped with 3 inch hose connections, with hose and nozzles attached.

There is a cart with 1800 feet of hose : one 500 gallon Knowles pump, 23 fire king extinguishers placed in the different buildings on the surface and 15 fire king extinguishers placed at convenient points in the mine.

Underground Machinery :—

One Jenckes donkey engine, 8 by 10 inches, second motion. One marine engine 7 by 12 inches, second motion. One electric haulage engine, Matheson & Co. third motion, driven by a Westinghouse motor. Water is taken out by pumps: there are 10 pumps located and described as follows :—

1 Hawthorne-Davey 10 by 24 inches, single acting, driven by a 75 h. p. Westinghouse motor, at the bend, or near the shore line: 1 McDougall turbine, 3 stage 5 inch at lodgment below No. 1 south level, (air-driven): 1 duplex Jeansville, 16 by 8 by 18 inches, an auxiliary to the McDougall pump.

Two Cameron pumps, 14 by 6½ by 18 inches, located at lodgment below No. 3 south levels.

Two Cameron pumps, 7 by 4½ by 12 inches, in deeps for sinking purposes.

One Cameron pump, 7 by 4½ by 12 inches, in No. 2 south.

One Cameron pump, 7 by 4½ by 12 inches, in No. 4 north.

One Northey pump, 7¼ by 4½ by 10 inches, in No. 4 south.

Main haulage rope 1⅛ inch diameter. Donkey haulage rope ⅝ inch diameter.

Explosives.

Excellite, 931 ℔ : Bulldog, 43,045 ℔ ; Monobel, 475 ℔.

Rails in Mine.

The deeps and levels are laid with 30 ℔ rails : there are 21,000 feet. The headways and rooms are laid with 30,000 feet 18 ℔ rails.

Officials.

P. T. Pendergast, manager.

W. T. Chew, under-manager.

D. G. McMullin, overman.

Murdock Morrison, overman.

W. A. Baird, chief engineer.

William Burke, surface foreman.

Pipes in use.

4 inch water pipe (fire protection)....	3500 feet.
4 inch pump discharge..............	2200 feet.
10 inch suction (pump)................	220 feet.
7 inch pump discharge (cast iron)......	2700 feet.
2 inch pump discharge.................	1300 feet.
8 inch air-pipe........................	5500 feet.
4 inch air-pipe........................	6500 feet.
2 inch air-pipe........................	1500 feet.
1½ inch air-pipe........................	14500 feet.
½ inch water line for horses..........	3500 feet.
4 inch water supply to colliery	1500 feet.
4 inch, fire protection................	500 feet.

DOMINION NO. 8. COLLIERY.

Dominion No. 8. colliery is situate at Bridgeport, in the town of Glace Bay, Cape Breton county, and is owned and operated by the Dominion Coal Co., Ltd.

The bank-head is of wood, and of the old type having the ordinary bar-screen, and the old fashioned cages.

The colliery buildings are of wood and of the following dimensions:—

Boiler house	40 by 50 feet
Carpenter shop	28 by 34 feet
Warehouse....................................	20 by 31 feet
Machine shop	38 by 41 feet
Haulage and hoisting engine house......	60 by 35 feet
Wash house..................................	32 by 60 feet

This mine is on the Harbour seam, height of coal 5 feet: pitches 4 deg. 30 min. The shaft is 6 by 14 feet, 80 feet deep.

The mine is worked on the board-and-pillar system: all the coal mined by hand.

Total distances driven in levels.........2355 feet
" " " " " deep...1100 feet

Traveling ways in the mine are kept in safe condition.

The endless haulage system is in use at this colliery on levels and deeps: the haulage roads are kept in good condition: there is a one inch rope 18,000 feet in length in use.

There are 54000 cubic feet of air a minute in circulation produced by a Murphy fan, 8 feet in diameter; belt-driven, w. g. .3 inch. The fan-shaft is 80 feet and 10 feet in diameter.

The ventilation is one continuous current. The Marsaut safety lamps are used: 275 in use and 75 in reserve.

The fire protection is a 2 inch water-pipe leading from the main water supply on the surface to pit bottom and stables, with standard hose connections at regular intervals; and also fire-kings at pit bottom and at all landings. This mine is very damp, no sprinkling required. No gas has been detected for the last year. The average barometer reading in the mine is 29.40 inches. The average thermometor reading is 51.5 degrees.

The number of men employed underground is 263: on surface 74. The output was 176,735 tons: to produce this amount of coal 34,928 lb. of bull-dog powder was used, 5.06 tons for each pound of powder.

Rails in Mine.

19,200 lineal feet of 30 lb. 7300 lineal feet of 18 lb.

Surface Machinery.

One winding engine, 16 by 30 inches, drum 6 feet.

One bank engine, 9 by 16 inches, drum 20 inches.

One engine, (machine shop,) 7 by 9 inches.

One endless haulage engine, 18 by 36 inches.

One fan engine, 9 by 12 inches.

One knowles pump, 14 by 7 by 12 inches, (for fire purposes.)

One Northey feed-pump, 6 by 10 inches.

One Northey feed-pump, 4 by 10 inches.

One electric motor.

Two Ingersoll return-tubular boilers, 50, h. p. each.

Two B. & W. boilers of 212 and 318 h. p.

Underground Machinery.

Two turbine pumps kept for emergency purposes in case of accident to water-hoist.

Officers.

Michael McIntosh, manager.

Robt. Crosby, underground manager.

D. K. McDonald, overman.

Angus McCuish, overman.

Dan McNeil, chief engineer.

DOMINION NO. 9.

Owned and operated by the Dominion Coal Company, Limited.

Dominion No. 9 has the same bank-head as Dominion No. 2. In addition to Dominion No. 2 equipment there are two weighing scales, gravitation screens, and two picking-belts driven by a 6 by 8 inch vertical Matheson engine.

The other colliery buildings are the same as for Dominion No. 2.

This seam is known as the Harbour Seam and is from five to six feet in thickness, and has a pitch of about 6 per cent.

The seam is reached by means of shafts: a coal shaft and a man shaft, and material-and-air shaft, the dimensions of which are respectively as follows:

The coal shaft which forms a part of shaft to Dominion No. 2, the under seam, is 11 by 38 feet from face to face of concrete. Dominion No. 9 division of shaft has two compartments of which the following are the dimensions of each from face to face of buntings:—10 by 7 feet 5 inches. The depth of shaft to Dominion No. 9 is 407 feet to pavement. The man shaft, material-and-air shaft are entirely separate from Dominion No. 2. There are two compartments in this shaft: one for men and material, and one for air.

The dimensions of each are as follows: the former 11 by 20 feet, the latter 11 by 19 feet: depth to pavement 430 feet.

The method of working is room-and-pillar. The following is the development work for the year:

Name of place		Distance driven
No. 1 north level high	off north deep	1045 feet
No. 1 north level low	off north deep	1020 feet
No. 2 north level high	off north deep	660 feet
No. 2 north level low	off north deep	630 feet
Main deep	north angle deep	760 feet
Back deep	north angle deep	680 feet
No. 1 north high level	off north angle deep	485 feet
No. 1 north low level	off north angle "	515 feet
No. 3 south high level	off north angle "	1185 feet
No. 3 south low level	off north angle "	900 feet
No. 4 south high level	off north angle "	295 feet
No. 4 south low level	off north angle "	365 feet
Main deep	south deep angle	423 feet
N. back deep	south deep angle	280 feet
S. back deep	south deep angle	375 feet
No. 2 south high level	off south deep angle	555 feet
No. 2 south low level	off south deep angle	520 feet
No. 3 south high level	off south deep angle	520 feet
No. 3 south low level	off south deep angle	545 feet
No. 4 south high level	off south deep angle	1305 feet
No. 4 south low level	off south deep angle	1442 feet
Water level high	off south deep angle	1735 feet
Water level low	off south deep angle	1730 feet
No. 3 north level high	off south deep angle	280 feet
No. 3 north level low	off south deep angle	305 feet
No. 4 headway back	off 1 north level n. deep	850 feet
No. 4 headway main	off north level "	895 feet
No. 5 headway back	off north level "	700 feet
No. 6 headway back	off north level "	760 feet
No. 5 headway main	off north level "	705 feet
No. 6 headway main	off north level "	748 feet
No. 7 headway back	off north level "	570 feet
No. 7 headway main	off north level "	690 feet
No. 1 headway back	off 5 south level n. a. deep	460 feet
No, 1 headway main	off south level "	420 feet
No. 2 headway back	off south level "	300 feet
No. 2 headway main	off south level "	600 feet
No. 1 headway back	off south waterway s. deep	280 feet
No. 1 headway main	off south waterway s. deep	275 feet

The traveling roads north and south are in good condition.

The method of haulage is as follows: There is a trip haulage in north deep which hauls coal from the various landings directly to the pit bottom. On No. 1 north landing, a main-and-tail rope haulage has been installed which conveys the coal to main deep.

At the junction of No. 2 and No. 3 levels there is a trip-haulage which gravitates the coal from No. 2 and No. 3 to the main deep.

On the south side of the mine there is locomotive (air) haulage which conveys the coal from the head of the south deep to the pit bottom a distance of about two thousand feet.

There is a trip haulage on south deep similar to north deep. There is also a main-and-tail rope haulage on No. 3 south level which conveys the coal from No. 2 and No. 3 to main deep.

Haulage roads are all in good condition. There are 185,000 cubic feet of air a minute in circulation, produced by a Walker fan 24 by 7.5 feet, and distributed as follows:

North headway—42,000 cubic feet.
North deep—60,000 cubic feet.
Curry's headway—36,000 cubic feet (south)
Overcast—47,000 cubic feet (south)
The size of the fan drift is 15 by 14 feet.
The size of the air shaft is 11 by 18 feet.

572 Ackroyd & Best safety lamps are in use and 100 in reserve.

The average quantity of water pumped daily is 504000 gallons.

Air pipe :

8 inch wrought iron	2300 feet
6 inch wrought iron	8900 feet
4 inch wrought iron	11,900 feet
3 inch high pressure	5100 feet
2 inch wrought iron	14,400 feet
1 ½ inch wrought iron	40,600 feet

Water pipe :

2 inch wrought iron	6000 feet
6 inch wood	4000 feet

The mine is comparatively damp : sprinkling is not considered necessary.

A new lodgment is under construction near the shore-line of north deep . Bore holes have been put down at this point from surface and when lodgment is completed, the water will be discharged to the surface by means of electric pumps.

The general condition of the mine is good.

The following is the number of men employed, in each section of the mine, based on the distribution of the air.

North headway	30
North deep	230
Curry's headway	100
Overcast south	195

Officers—

D. L. McKay, manager.

D. J. McCuish, underground manager.

R. J. McDonald, overman.

Gilbert Darroch, overman.

Wm. Rodgers, overman.

Rory V. McNeil, assistant overman.

Matte. E. Hall, assistant overman.

John A. Ferguson, general chief engineer.

Walter McAulay, colliery engineer.

Dan. B. McKenzie, surface foreman.

Barometric pressure and Temperature—

Month		Thermometer	Barometer
Oct,	1910	52 degrees	29.7 inches.
Nov.	1910	46 degrees	29.7 inches.
Dec.	1910	32 degrees	29.5 inches.
Jan.	1911	27 degrees	29.82 inches.
Feb.	1911	25 degrees	29.68 inches.
March	1911	30 degrees	29.78 inches.
April	1911	39 degrees	29.99 inches.
May	1911	50 degrees	30.00 inches.
June	1911	55 degrees	30.04 inches.
July	1911	63 degrees	30.30 inches.
Aug.	1911	63 degrees	29.98 inches.
Sept.	1911	58 degrees	30.14 inches.

The readings have been taken in the mine for the last three months only. The surface machinery is the same as for Dominion No. 2, excepting the coal hoisting-engines, man-engine and fan-engine.

The following is surface machinery in addition to that reported for Dominion No. 2.

Where in use.	Kind of engine.	Size of drum.	Size of cylinder.	Size of rope
Coal hoisting.	Jenckes Corliss,	8 ft. dia. 2 ft. 7 in. wid.	24 by 42 in.	1⅜ in.
Man shaft.	Matheson.	8 ft. dia. 2 ft. 7 in. wid.	18 by 36 in.	1¼ in.
Fan.	Jenckes		16 by 30 in.	
Fan (spare)			16 by 30 in.	
Ventilating fan.	Walker	24 ft. 6 in. dia.		

Underground Machinery—Engines.

Main north deep, Flory, 14 by 20 inches: rope ⅞ inch diameter.

North headway, Flory, 9 by 10 inches: rope ⅞ inch diameter.

No. 1 north level, Flory. Main and tail, 9 by 10: rope ⅝ inch diameter.

3 north level, 1 Flory 8 by 10 inches: rope ¾ inch diameter.

Near face, north deep, Jenckes, 8½ by 15 inches; rope ⅝ inch diameter.

Main south level, Jenckes, 14 by 20 inches: rope ⅞ inch diameter.

No. 3 south level, Flory, main-and-tail 9 by 10 inches; rope ⅝ inch diameter.

No. 2 south headway, Flory, 8 by 10 inches: rope ¾ inch diameter.

Near face south deep, Jas. Cooper, 6 by 8 inches: rope ⅝ inch diameter.

Air locomotives—

1 Porter, south motor road, weight 17 tons, 10½ by 14 inches.
1 Porter, south motor road, weight 10 tons, 7 by 14 inches.
1 Porter, north motor road, weight 7 tons, 7 by 12 inches.

Pumps—

Where located.	Makers.	Size.
Near pit-bottom.	Northey duplex.	12 by 24 by 8 by 24 compound.
Near pit-bottom.	Northey duplex.	20 by 8 by 24 compound.
Near pit-bottom	Cameron, Duplex	18 by 33 by 9 inches.
South deep	Jeansville Duplex	14 by 8 by 18 inches.
South deep	Northey Duplex	7¼ by 4½ by 10 inches.
Water level (south)	Northey Duplex	7¼ by 4½ by 10 inches.
North deep	Northey Duplex	7¼ by 4½ by 10 inches.
North deep	Northey Duplex	7¼ by 4½ by 10 inches.
North deep	Cameron	7 by 4½ by 12 inches..
North deep	Jeansville	14 by 8 by 18 inches.
Spare pump	Cameron	12 by 14 by 7 inches.

Explosives:

58,694 lb. Bull-dog : 400 lb. Monobel.

Timber Used Underground:

Class of timber	Length	No. of pieces	Size at small end
Props	7 feet	87367	5 inches.
"	8½ feet	310	5 inches.
"	9 feet	175	5 inches.
Booms	14 feet	950	6 inches.
"	14 feet	48	8 inches.
"	15 feet	9	8 inches.
"	16 feet	1852	6 inches.
"	16 feet	36	8 inches.
"	17 feet	5	8 inches.
"	18 feet	12	8 inches.
"	20 feet	30	8 inches.
Sleepers	5 feet	18945	5 inches (face) 4 inches thick.
"	6 feet	1690	6 inches (face) 5 inches thick

Rails underground:

60 lb..........	15600 lineal feet.
56 "........	12000 lineal feet.
30 "...........	22600 lineal feet.
18 ".........	116500 lineal feet.
	166,700 lineal feet.

DOMINION NO. 10 COLLIERY.

This mine is on the Emery seam at Reserve in the county of Cape Breton, and is owned and operated by the Dominion Coal Co.

The shaft is 16 by 24 feet and 140 feet deep. The coal is landed on the same bank-head as the coal from No. 5 slopes; but has separate screens and picking-belts.

The seam is worked on the long-wall system, except a small section, off the south headway that is worked on the board-and-pillar-method; on account of the colliery reservoir overlying this section. As the headway has advanced beyond the part of the seam under the reservoir, levels are started north and south off this head-way, and a long-wall face formed. The long-wall face is undercut by the disk long-wall machine; and the rooms and narrow work, by the puncher machine. Distance driven in narrow work for the year is as follows:—

North deeps 400 feet total length 2800 feet. Main north level 600 feet. Total length of face 2500 feet and has advanced 200 feet. No 2 north, of the deep 400 feet total length of face 2100 feet and has advanced 200 feet. No. 3 north, off the north deep 650 feet. No. 2. south off the north deep 650 feet.

The traveling-way is kept in safe condition.

The endless haulage is on the main deep, and hauls the coal a distance of 2500 feet. On the main north level, the haulage is done by main-and-tail rope with branches up two of the main gates. On No. 2 north, the haulage is done by main-and-tail rope, with branches up two of the main gates: on the south headway the haulage is direct.

There are 30,000 cubic feet of air a minute in circulation, produced by a Stine fan 8 feet in diameter-w. g. 4-10 of one inch. The fan is belt-driven.

The air-pipe in the mine can be converted into a water line when required; as it is connected with main water supply on the surface; and can be used in emergency for fighting fires. There are fire kings on all the landings. The mine is damp—no sprinkling required.

Employees.

Machine men	28
Machine helpers	28
Shooters and loaders	80
Labourers under-ground	115
Labourers Surface	60

265 Ackroyd & Best safety lamps are in use.

This colliery has the same surface machinery as No. 5 colliery.

Under-ground Machinery.

Two Flory main-and-tail rope engines 14 by 20 inches. One Cameron pump (pitbottom) 12 by 7 by 34 inches.

One Lawrence centrifugal pump, capacity 1000 gallons a minute. One small sinking-pump.

The main-deep haulage was extended 500 feet during the year: also the main-and-tail rope haulage on the main north level, and No. 2 north off the north deep.

A centrifugal pump has been placed in the new lodgment, capable of handling 1000 gallons a minute. A new pump-house 30 by 20 by 10 feet with concrete walls and stable beams supporting the roof has been built.

Explosives.

160908 lb. bull dog powder used in coal.
4008 lb. monobel powder used for brushing.
16908 lb. samsonite powder used for brushing.

Rails in mine.

7500 feet,	45 lb.
4800 feet,	30 lb.
12300 feet,	18 lb.

Officers.

Robert Simpson, manager.

Joseph Boche, under-ground manager.

Walter Johnstone, overman.

Henry Bert.

GOWRIE MINE.

Owned and operated by the North Atlantic Collieries Ltd. in the County of Cape Breton.

The bank-head is of wood.

The old type of cage is used.

Weight of coal each hoist is 2000 lb.

Empty box 900 lb.

This mine is in the McAulay seam on the north side of Cow Bay. The seam is 4 feet 4 inches thick. Good coal, with a band of shale ten inches thick, immediately over it.

The shaft is 196 feet deep and 12 feet in diameter. The true dip is North ten degrees east. The workings are all under the sea, the rooms being eighteen to twenty feet wide, the pillars twenty seven to thirty feet, varying with thickness of cover. There is no dust in the mine, it being damp and slightly gaseous. Open lights are in use, the officials and examiner alone using Marsaut safety lamps. The travelling roads are in safe condition.

The method of haulage is by the endless rope system, and engine-plane system.

Haulage roads are in safe condition.

The water for colliery use is pumped from Sand Lake to the colliery reservoir which holds 400,000 gallons.

The fire protection apparatus consists of fire pump, hose and water barrels placed at convenient stations round the mine.

There are two fans at the colliery, a Murphy, 8 by 4 feet, and a Walker 18 by 6 feet. The former is an emergency fan. The fan drift is 10 by 12 feet, and the fan shaft 10 feet in diameter. w. g. 1-5 inch. The Walker fan is driven by rope geared two to one. The Murphy fan is directly connected. The Walker fan-house 26 by 19 feet is of cement. The Murphy fan-house 22 by 10 feet is of wood, and is 15 feet from the shaft. The Walker fan-house is 45 feet from the shaft. Some of the stoppings are stone, but most of them are wood. There are 32,000 cubic feet of air a minute in circulation: one current.

Development work has advanced as follows:

No. 2 west levels 900 feet: north deeps 800 feet: No. 1 east levels, north deep 1100 feet. The average quantity of water pumped daily is 430,000 gallons. The air pipe leading from the compressor into the mine is six inches reduced to four inches, two inches, and one inch. The water pipes are six inches, four inches, and two inches.

There is only one section of this mine working at present, namely, north deep.

Number of men employed 65.

Officers.

T. G. McKenzie, general manager.

D. A. Ferguson, manager.

W. A. McDonald, overman.

Jos. Phalen, examiner.

Angus McLeod, examiner.

Surface Machinery—

One hoisting engine, 12 by 15 inches, drum 5 feet diameter, geared 5 to 1.

One endless haulage, 13 by 18 inches, driving wheel, 5 feet diameter, geared 5 to 1.

One engine, 6 by 8 inches, drum 14 inches, geared 6½ to 1.

One screen engine, 8 by 10 inches, drum 16 feet, geared 6 to 1.

One Rand compressor, steam 20 by 36 by 48 inches, air 20 by 32 by 48 inches. Capacity 3200 cubic feet a minute.

One Ingersoll compressor, steam 12 by 14 inches, air 12 by 12 inches, capacity 600 cubic feet a minute.

One Blake circulating pump, 10 by 12 by 4½ inches.

Three B. & W. boilers, 350 h. p. each.

Size of hoisting ropes are 1-1/8 inch.

Size of endless haulage rope 1-1/8 inch.

Underground Machinery—

One Jeansville pump 14 by 12 by 6 inches, at pit bottom.

One Cameron pump 15 by 10 by 33 inches, at pit bottom.

One Smart-Ebby pump, 12 by 5 by 12 inches, at No. 2 east level lodgment.

One Cameron pump, 14 by 8 by 18 inches, at No. 2 east level lodgment.

One Northey pump, 5 by 3½ by 6 inches, in No. 2 west deep.

Two International pumps, 6 by 4 by 6 inches, in north deeps.

The pumps at the pit bottom are driven by steam, the others by compressed air.

One engine, 8 by 10 by 16 inches, drum geared 6 to 1.

One engine, 6 by 8 inches, drum 14 inches, geared 6½ to 1.

One engine, 5 by 5 inches, drum 12 inches, geared 6 to 1.

Size of engine-plane ropes ⅝ inch.

Timber used during the year—

Props 9264 length 5 feet 6 inches or 50952 lineal feet, diameter 4½ inches.

Sleepers 4248 length 4 feet 6 inches or 19116 lineal feet, face 4 to 5 inches 4 inches thick.

The out-put during the year was 47,992 tons, to produce this 9676 lb. of bull-dog powder were used which gave 4.96 tons coal for each pound of powder used.

Rails in mine, 29,920 feet of 35 lb. 41,600 feet of 18 lb.

Timber used at Collieries, Year ended September 30th, 1911.

COLLIERY	PROPS		BOOMS.		SLEEPERS	
	No. Used	Lineal Feet	No. Used	Lineal Feet	No. Feet	Lineal Feet
Dom. No. 1	74952	673634	1680	25653	29265	117540
" " 2	188753	1604689	1932	30559	28103	144950
" " 3	64428	579852	646	9832	8924	45289
" " 4	122044	976362	2444	34038	19094	80878
" " 5	70165	651005	59	1020	9670	40085
" " 6	22301	159400	363	5304	13038	65328
" " 7	44737	402633	12082	185643	14657	64328
" " 8	49281	345135	41	620	7160	28680
" " 9	92570	649837	3623	22758	21820	111245
" " 10	93873	514181	33	462	9976	40164
" " 12	34492	241132	2572	32165	19071	77316
" " 14	19870	156676	5553	81262	16876	74024
Total	877466	6954536	31028	429316	197654	889827

Dia. small end 4½ to 6 inches

Dia. small end 7 to 10 inches.

Dissection of Output, year ending September 30th, 1911

Colliery	Narrow Work		Machine Rooms		Hand Rooms		Pillars		Longwall		Total Output
	Tons	%	Tons	%	Tons	%	Tons	%	Tons	%	
Dominion No. 1...	107399	18.3	343207	58.6	4939	.8	130413	22.3	.. ..	......	585958
" " 2...	118163	16.	163455	22.2	91321	12.4	364161	49.4	....	......	737100
" " 3...	33705	17.2	46867	23.9	19494	9.9	96053	49.	....	......	196119
" " 4...	63980	16.1	115889	29.1	50919	12.8	166666	42.	....	......	397454
" " 5...	4605	1.4	134133	39.7	17235	5.1	182129	53.8	....	......	338102
" " 6...	50001	19.8	200099	79.3	....	......	2142	.9	... .	......	252242
" " 7...	48466	25.1	140481	72.6	749	.4	3719	1.9	....	......	193415
" " 8...	16885	8.5	....	......	160112	91.5	....	......	... .	......	176997
" " 9...	130366	32.8	201691	50.8	18210	4.6	47150	11.8	....	......	397417
" " 10...	31514	17.8	17829	10.1	199	.1	....	.. ...	127072	72.0	176614
" " 12...	67851	26.6	61722	24.2	125898	49.2	....	......	....	......	255471
" " 14...	73249	53.2	61654	44.7	2799	2.1	42	......	....	......	137744
" " 15...	26259	100.	....	......	....	......	....	......	....	......	26259
" " 16...	8790	100.	....	......	....	......	....	......	....	......	8790
" " 21...	2813	100.	....	......	....	......	....	......	....	......	2813
Totals.........	784046	20.2	1487027	38.3	492875	12.6	992475	25.6	127072	3.3	3882495

Water pumped from Mines, year ending September 30th, 1911

Colliery	Gallons per month
Dominion No. 1...	16000000
" " 2...	7000000
" " 3...	8500000
" " 4...	53000000
" " 5...	26000000
" " 6...	8000000
" " 7...	10000000
" " 8...	35000000
" " 9...	8500000
" " 10...	15000000
" " 12...	3500000
" " 14...	3000000
" " 15...	2000000
Totals.........	195500000

Normal Quantities of Air in Circulation

Dominion Coal Company's Collieries, year ending Sept. 30th, 1911

Colliery	Cubic ft. a minute	Water gauge in.	
Dominion No. 1...	170000	2.2	
“ “ 2...	227000	4.3	
“ “ 3...	83000	2.4	
“ “ 4...	100000	2.1	
“ “ 5...	140000	1.5	French slope
“ “ 5...	45000	0.5	East slope
“ “ 6...	61000	1.2	
“ “ 7...	64000	1.4	
“ “ 8...	53000	0.3	
“ “ 9...	190000	2.5	
“ “ 10...	38000	0.4	
“ “ 12...	97000	0.7	
“ “ 14...	90000	1.0	
“ “ 15...	45000	0.3	
Total............	1423000		

DOMINION COAL COMPANY'S MINES.

Area of Close Work and Pillar in the Mines under my Inspection for the Year Ending September 30th, 1911.

MINE	Acres Worked out Pillars	Acres Worked, Rooms and Narrow Work	Angle of dip	Feet
No. 2	82.681	53.076	4° 00′	6.91
" 3	28.503	16.345	4° 30′	6.81
" 4	78.384	42.571	5° 10′	7.
" 5	49.109	17.854	4° 30′	7.75
" 6	No pillar work	36.809	7° 00′	6.7
" 7	0.29	24.0427	4° 00′	6.0
" 8	No pillar work	30.239	4° 30′	5.5
" 9	36.584	65.294	3° 30′	5.75
" 10	17.835	Long wall work	3° 30′	4.41
" 21	....	...........3.65....	23° 45′ 3° 50′	to south out crop 5.17 to north out crop

JOHN J. McNEIL,

Deputy Inspector, Mines,

Glace Bay, N. S.

SYDNEY MINES, N. S.,
October 24th, 1911.

HIRAM DONKIN, ESQ., C. E.,
Deputy Commissioner of Public Works and Mines,
Halifax, N. S.

DEAR SIR:—I beg leave to submit my annual report on the coal mines in the northern division of Cape Breton County for the year ended September 30th, 1911, also report of Dominion No. 1, 12, 14, 15 and 16, collieries in the southern district of Cape Breton county.

I regret to have to report 46 accidents, 17 of which were fatal. Eight were killed by an explosion of gas in Sydney No. 3 mine on the 3d of January 1911. Archie Ferguson and Harry Purchase deputies; Eugene Reed, James Messervey, Arthur Amey, Brian Murphy, John Wade (Mahoney) and Israel Parsons, laborers.

Andrew Dawe, machine helper, was killed on December 7th, 1910 by a fall of stone. He and the machine runner were putting up timber which had been knocked out by a runaway box, when a stone fell on him killing him instantly. On May 3d, 1911, Frank Groves and James Hamilton were drowned in Dominion No. 16 colliery. They were working at the face in the main slope. Norman Ferguson and Thomas Clarke were driving a crosscut between the main slope and a slant that was driven off the back slope. In the slant was a body of water. The shot blew a hole through about 20 inches square and the water went rushing down the main slope drowning the two men at the face. The crosscut was about 35 feet above the face of the main slope. Before firing the shot on the high side which was the thin side, Ferguson notified Groves and Hamilton to come up from the sinking, as they were going to fire a shot, which they did. After the shot was fired, the four men examined the place and came to the conclusion that the place would not go through on that shift. When Ferguson and Clarke were going to fire the second shot, they again notified Groves and Hamilton. Groves replied, "let her go," and as the shot went off the water rushed down the slope drowning both men. Their bodies were found 20 feet from the face. If they had managed to stand, their heads would have been above water. On May 19th, Stephen McKenzie was fatally injured in Dominion No. 14 mine, being struck by a balance-cage, as he was walking down the balance. He died after he was taken to the hospital. On May 19th, Henry Farrell was killed in the McKay Mine. He was in the act of pulling down a piece of stone, and over balancing himself, fell on his face; the stone coming down struck him on the head killing him instantly. On May 23d, John Neal, loader, in Sydney No. 2 colliery was fatally injured by a runaway box striking him as he was in the act of pushing an empty box off the main road onto the turn, to let the full box pass. He died in the hospital the following day. On June 15th, Benjamin Enion was fatally injured in Sydney No. 3, colliery by a fall of coal. He died in the hospital six hours after the accident. On August 2d, Wasye Kokusz was fatally injured in Dominion No. 1 colliery by being caught between a box and the roof, breaking his spine. He died in the hospital. On Sept. 6th, Alberto Cicchetto was killed by a fall of stone in Dominion No. 14 Mine. He was loading coal in No. 1 west level. The stone fell at the face. It was what is called a pot, being about 11 feet diameter, 20 inches thick in the centre and tapering to a feather edge all around. Frederico Machino, who was loading with him had both legs fractured and arms lacerated. The place was well timbered. There were no fatal accidents at Sydney No. 1, No. 4 or No. 5 collieries of the Nova Scotia Steel and Coal Company, nor at Dominions No. 12 or No. 15 collieries of the Dominion Coal Company.

Owing to the explosion at Sydney No. 3 colliery and the burning of the compressor house at Sydney No. 1, there is a decrease of 77,784 tons in the Nova Scotia Steel & Coal Company's output this year. But I am pleased to be able to report that the collieries of the Dominion Coal Company in my district, have increased their outputs by 248,131 tons.

All the mines are in good condition and the Mines Regulation Act is strictly enforced and to the best of my knowledge every precaution is taken to prevent accidents.

SYDNEY NO. 1 COLLIERY.

Owing to the compressor house at this colliery being burned on December 10th, 1910, and the compressor being considerably damaged, several sections of the mine were idle until the first of January 1911. This caused a decrease in the output from the previous year. The output during the year was 239,542 tons—a decrease of 15,206 tons. The output from rooms, pillars and narrow-place work was as follows: rooms 75,160 tons, pillars 101,295 tons, narrow-place work 63,087 tons.

There were 20,323 lb. of bull dog compressed powder used during the year.

There are 752 men employed at this colliery, of which number there 340 skilled and 287 unskilled employed in the mine, and 64 skilled and 61 unskilled on the surface. There are also 79 boys employed, 68 of whom are in the mine, 11 on the surface.

There are 695 Marsaut Safety lamps used. The traveling road is in good condition.

Development Work.

No. 1 south deeps	600 feet
No. 1 south levels	260 feet
Barrier level south side	400 feet
Bottom south level	300 feet
“ north “	300 feet
Headways off No. 6 level south	666 feet
Deeps “ “ “ “	450 feet

Rails in Mine.

There are 20,752 feet of 12 lb. 63,781 feet of 18 lb. and 82,368 feet of 28 lb.

System of working is room-and-pillar : rooms being 17 feet wide and pillars 60 feet thick, with crosscuts driven every 60 feet. Coal is all mined by hand-picks. The pillars are extracted very successfully : they are 60 feet thick, ribbed in from the main headway, then worked back, taking out every ton of coal.

Thickness of seam is from 5 to 6 feet, coal soft and gaseous : roof and floor are shale. Some districts of the mine are dry, and water-tubs are used for spraying. Direction of true dip is south 80 degrees east.

Timber used is 4½ inches, small end. System of timbering props, caps, and booms. The timber is Cape Breton product.

There are 153 working places in the mine.

I visited this mine sixteen times during the year.

Machinery on Surface.

Bankhead is of wood. Pit head-frame of steel.

Detaching hooks on shaft ropes, also safety catches in pulley frames.

One hoisting engine, 36 by 60 inches: drum 18 by 7 feet. Steam is used at 60 lb. pressure being supplied by means of a Boston reducing-valve from the main steam range.

One man-engine 16 by 30 inches, directly connected to a pair of conical drums, equipped with regular and safety brakes.

One plane-rope haulage-engine 16 by 30 inches geared 3/5 to 1, on the surface with a haulage rope going down the shaft into the north side of the pit: friction drums, 6 feet in diameter by 26 inches wide.

One compound-engine 14 by 24 by 42 inches, geared 6 to 1 to bull-wheel shaft, endless haulage rope system, taking coal from south side of pit, 42 revolutions a minute, the pinion being driven by a friction clutch.

One Walker compressor, steam cylinders 24 and 46 inches, air cylinders 26 and 42 inches, stroke 54 inches, 4000 cubic feet of air a minute at 55 revolutions. The haulage engine and compressor are running condensing, and connected to a 12 and 17 by 19 by 15 duplex Worthington jet condenser.

Two tubs of coal are hoisted at one time. They are taken out by hand and weighed on a quick reading platform scale, and dumped by means of a hand-operated revolving tipple, on a bar screen having an opening of ¾ of an inch, the coal being separated into two sizes. The screens deliver the coal to a combined picking belt and elevator on which it is picked and elevated to sufficient height to load into fifteen-ton hoppers.

The ventilating fans are located at No. 5 colliery on the same seam, about 3000 feet from No. 1 colliery, and are used for ventilating both collieries.

The ventilating equipment consists of one motor-driven Capell steel-plate fan 20 by 5½ feet, driven by a 120 h. p. direct current, 220 volt motor, geared with a 4.2 to 1 reduction to fan. Usual speed of fan about 100 revolutions a minute, capacity 120,000 cubic feet of air a minute, under 3 inch water guage.

Spare equipment consists of a 30 by 10 feet Walker-Guibal fan, directly connected to 22 by 24 inch engine, running 60 revolutions a minute, capacity 120,000 cubic feet of air a minute under 3 inch water guage. Guibal fan, steam driven, connected direct. Capell fan electrically driven, connected by gearing.

Average water gauge, three inches.

Average thermometer, fifty-five degrees.

Average barometer, thirty inches.

Length of fan-drift 34 feet, area 80 feet, fan shaft 10 feet in diameter.

Guibal fan-house, 30 by 16 feet, wood, covered with metal shingles. Capell fan-house, 24 by 12 feet, brick. Actual distance of Guibal fan-house from shaft 20 feet, Capell fan-house 40 feet.

The air is divided once at the pit bottom. The split going south is one continuous current around the working faces, it returns through the old workings to the fan shaft at No. 5 colliery. The air going north is divided into three splits and is conducted around the working faces to main return, thence to No. 5 colliery. Size of airway is 5 feet 6 inches by 9 feet. Wood and stone stoppings, and the ordinary tarred brattice cloth are used.

The boiler plant consists of six 272 h. p. B. and W. water-tube boilers, operating at 120 lb. pressure to the square inch. Three of these boilers use the waste gas from thirty Bauer coke ovens, as fuel. A 108 by 54 inch Sturtevant induced-draft fan, directly connected to an 8 by 10 S. C. engine, being used to draw the gases from the coke ovens through these boilers, and deliver them to a round brick-stack 125 feet high, 8 feet in diameter: the stack also being used to supply draught for the other three boilers, which are fired with a mixture of slack-coal and coke-breeze.

Underground Machinery.

There are nine pumps in the mine. No. 6 Cameron, 8 by 12 by 5 inches, located at No. 3, and seven Northey duplex, 5½ by 6 by 3½ inches, at intervals between the bottom and the face of deeps, pumping water to the lodgment at the pit bottom. The water from the pit bottom to the surface is pumped by a 15 by 28 by 8½ by 24 inch, outside-packed direct connected Jeansville pump, connected to an 8 by 12 by 12 inches Cameron jet-condenser. This pump has a capacity of 900 imperial gallons a minute under 600 feet head. Pumps are operated by steam and compressed air. Maximum quantity of water that can be discharged in an hour is 36,000 gallons. Capacity of reservoirs on surface—217,301 gallons.

Water supply is from Pottle's Lake, North Sydney.

The south side is operated by endless haulage, 9,240 feet in length. The haulage is in the form of a loop and has a little more than 25,000 feet of rope in service. Size of rope 1.1-3 inch.

The north side is operated by a plane-haulage system: two ropes, 7,200 feet long, 30 cars on each rake: weight of empty car 850 lb. capacity 1500 lb. The coal is hauled to these ropes by horses and small haulage-engines.

Pitch of slope, one in eleven. Length of slope 9,200 feet, width 9 feet.

Depth of coal shaft—680 feet, 13 feet diameter. Depth of man shaft—680 feet, 11 feet diameter.

Improvements.

Boiler house—ash crusher and elevator built for handling ashes and delivering into slate pipe.

Induced draft fan, built by Sheldons Limited, Galt, Ont. in connection with five 272 h. p. B. and W. boilers.

Compressor house burned in December 1910, 38 by 68 feet, walls 18 feet high, being rebuilt with steel frame and earthenware tile.

Officers.

John W. Johnston, manager.

David Brown, underground manager.

Edward Lockman, underground manager.

J. D. Colburn, overman.

Alex. McDonald, overman.

Duncan Jardine, overman.

Thos. Merritt, overman.

Michael Sullivan, overman.

Wm. E. Oram, surface foreman.

Joseph J. McKinnon, engineer.

SYDNEY NO. 2 COLLIERY.

There are 232 men employed at this colliery, of which number there are 124 skilled and 93 unskilled in the mine, and 4 skilled and 21 unskilled on the surface. There are also 28 boys employed, 24 in the mine and 4 on the surface.

The output during the year was 93,571 tons—an increase of 9,016 tons over the previous year. The amount mined in rooms was 62,400 tons and in narrow places 31,171 tons.

There were 14,361 lb. of bull-dog compressed powder used during the year.

The coal is mined by coal cutting machines of the Hardy type, operated by compressed air furnished by a Walker compressor at

No. 1 colliery. Owing to the compressor house being burned, the mine was idle from 7th, of December until the 1st, of January. All the pumps are operated by compressed air and the deeps and No. 6 levels were flooded when the mine was idle. This meant a decrease in the output of about 10,000 tons.

This mine is about 950 feet north west of No. 1 colliery. There are four slopes 7 feet wide sunk on the Loyd's Cove Seam. This seam overlies the main seam. Endless haulage is in two of these slopes: the empty cars go down No. 1 and the full cars come up No. 2 slope. No. 3 slope is used for a traveling-road and pipe-line, and No. 4 slope is used for a return air-way. The cover at the shore line is 104 feet. On account of this thin cover the first lift is 3,400 feet from the crop line, in order to give 450 feet of cover. The crop line is 1,600 feet from the shore line. The seam is from 5½ feet to 6½ feet thick, soft and gaseous. The mine is damp: pitch, one in eleven. Direction of true dip, east. The roof and floor are shale. The slope was extended last year 470 feet, making a total length of 5,490 feet. Cover at face of slope, 401 feet.

There are two sections in the mine, north and south. The air is divided once at the bottom of the slope, one split going north and one south. Each side has a separate return to the fan-shaft. Wooden stoppings and the ordinary tarred brattice cloth are used. Length of fan-drift 20 feet, area 60 feet. Diameter of fan-shaft 10 feet. Size of air-way 6 by 7 feet. Quantity of air in circulation 35,000 cubic feet a minute. Average water guage 1.4.

System of working is bord-and-pillar. Width of rooms 18 feet, pillars 25 feet to 33 feet according to cover. Crosscuts are driven every 60 feet. Traveling road in good condition.

Size of timber used is 4½ inches small end. System of timbering is props-with-caps, sometimes props-with-booms according to condition of roof. Timber is procured in Cape Breton.

Development Work.

		Total
No. 4 north level	160 feet	1300 feet
No. 5 “ “	545 “	1775 “
No. 6 “ “	800 “	1000 “
No. 5 south “	425 “	1725 “
No. 6 “ “	725 “	925 “
Inside headway No. 5 north level	540 “	540 “
Headway off No. 5 south “	160 “	660 “
“ “ No. 6 “ “	440 “	440 “
“ “ No. 6 north “	360 “	360 “

There are 58 working places in the mine.

There are 281 safety lamps of the Marsaut type.

Rails in Mine.

There are 59,923 feet of 18 lb. 18,658 feet of 28 lb.

I visited this mine twelve times during the year.

Surface Machinery.

Bankhead is built of wood.

Samson posts are placed at intervals in the slopes for protection to the men that are sinking.

Ventilating equipment consists of one 15 by 10 feet, Capell steel-plate fan, driven by an engine having two 9 by 9 inch cylinders. The engine is geared with a 3.5 to 1 reduction to the fan. This fan is capable of supplying 150,000 cubic feet a minute with 5 inches of water gauge.

One tandem compound 14 and 24 by 42 inch engine, is used for driving the endless haulage rope. This engine runs 42 revolutions a minute, and is geared 6 to 1 to a bull-wheel shaft, the pinion driven by a friction clutch. This engine is at No. 1 colliery.

Compressed air is furnished from a Walker compressor at No. 1 colliery.

The Capell-fan is 15 feet diameter by 7 feet wide—connected by gearing 3½ to 1. Average water gauge reading 8-10 of an inch.

Average thermometer reading, 40 degrees.

Average barometer reading, 30 inches.

Fan house, 40 by 26½ feet, is of brick, distance from air shaft 10 feet.

An endless haulage system takes the coal out of the mine and onto the bankhead, 1,000 feet from the mouth of the slope. Length of slope 4,800 feet, 7 feet wide. Pitch one in eleven. Size of rope 1 1-8 inch in diameter. Weight of empty cars 1,080 lb. capacity one ton. The endless haulage rope delivers the coal from the incline and onto the bankhead floor. The tipple, screens and picking belt arrangement is in duplicate, each set being capable of handling about seventy-five tons of coal an hour. The full tubs enter a hand-operated revolving tipple which dumps the contents of the tub into a steel weigh-tank suspended on a special tank scale, the net weight of the coal being registered in the scale house The coal after leaving the weigh-tank passes over a bar screen having an opening of 2 inches. The coal, passing through the bar screen, is screened over a ¾ inch square-mesh knocking-screen. The coal is thus separated into three sizes: the coal passing through the bar screen and over the ¾ inch screen is delivered directly into cars. The 2 inch coal and the large screen coal are delivered to picking belts, where the coal is picked and transferred to cars. The picking belt has a movable end so arranged that it can be lowered into the bottom of a fifteen-ton hopper, to prevent excessive breaking, it is also used in an elevated position to transfer coal into box-cars by a collapsing-chute.

The bank-head machinery it driven by an electric motor.

Underground machinery.

One Cameron 22 by 10½ by 20 inches: one Northey duplex, 18 by 8 by 12 inches, 1400 feet from slope mouth: three auxiliary pumps located at each lift below this point, operated by compressed air. Maximum quantity of water that can be discharged in an hour is 30,000 gallons.

There are six dams in the mine, size 7 by 6 by 12 feet thick.

Water is supplied from Pottle's Lake, North Sydney.

In case of fire, connection is made with a hydrant placed in the watermain.

There are 22 Hardy coal cutting machines in the mine.

Officers.

Archie Ferguson, manager.

Daniel Brown, underground manager.

Wm. R. Coll, overman.

Wallace Caldwell, overman.

Edward Wilkinson, surface foreman.

SYDNEY NO. 3 COLLIERY.

There are 509 men employed at this colliery of which number there are 227 skilled and 180 unskilled in the mine, and 41 skilled and 61 unskilled on the surface. There are also 61 boys employed, 57 of whom are in the mine and 4 on the surface.

The output during the year was 189,946 tons, of this amount 140,512 tons were mined in rooms and 49,434 tons mined in narrow places. Owing to the explosion which occured on the 3d, January 1911, the output at this colliery is 74,937 tons less than last year: 38 rooms and 6 levels were lost: new headways had to be driven from No. 12, No. 13 and No. 14 levels to recover these working places. There were 77 brick stoppings and 60 board stoppings blown out, and no coal was raised from the 31st, of December 1910, until the 30th, of January 1911, as these stoppings had to be rebuilt and the level road retimbered, and falls of stone cleared away.

This mine is entered by three slopes driven parallel to one another, now down 8,885 feet. One is used for haulage, one for a traveling road, and the other for a return air-way. The seam is from 4½ to 5½ feet thick. The coal is gaseous: floor and roof are shale. The mine is dry in parts and water tubs with spray-pipe are used. The seam dips one in ten, to one in twelve. Direction of true dip, north 60 degrees east. The coal is mined by coal cutting machines of the Ingersoll type, operated by compressed air. There are 38 of these in the mine.

Method of working is bord-and-pillar, width of rooms, 20 feet, pillars 25 to 40 feet thick: cross-cuts are driven every 60 feet.

System of timbering is props-with-caps, sometimes props-with-booms according to condition of roof. Size of timber used is 4½ inches small end.

There are two sections in the mine, north side and south side. There are 239 men on the north side and 85 men on the south side.

The air is divided once at bottom of the slope. Each side of the mine has a separate split of air.

Asbestos-fibre brattice cloth and board and brick stoppings are used. The traveling road is in good condition.

The bank-head which is located at mouth of slope is of wood. An endless haulage system is installed for taking the coal out of the mine and onto the bankhead. Length of haulage way, 8,885 feet, width 10 feet. Size of rope 1⅛ inch in diameter. Weight of empty car, 1080 lb. capacity, one ton.

Development Work.

		total
No. 8 level south	250 feet	3280 feet
No. 9 “ “	440 “	3430 “
No. 10 “ “	690 “	3180 “
No. 11 “ “	450 “	2630 “
No. 13 “ “	350 “	1870 “
No. 14 “ “	254 “	892 “
No. 1 “ north off angle deep	730 “	2750 “
No. 2 “ “ “ “ “	430 “	1730 “
Deeps driven off No. 2 level angle deep	150 “	450 “

Thickness of cover at face of main slope 725 feet.

There are 113 working places in the mine.

An induced-draft Sirocco fan built by the Robb Engineering Company, Amherst, to handle gas from six 232 h. p. Stirling boilers, was placed.

Rails in Mine.

There are 147,860 feet of 18 lb. and 38,206 feet of 28 lb.

There were 27,340 lb. of bull-dog compressed powder used.

There are 473 Marsaut safety lamps in use.

Officers.

Angus Ferguson, manager.

John Hill, underground manager.

Solomon Dewfall, overman.

John Hunter, overman.

Hugh Dickson, overman.

William Campbell, surface foreman.

John Wilson, engineer.

I visited this Mine eighteen times last year.

Surface Machinery.

Ventilating equipment is in duplicate.

One Steel Capell-fan, 15 by 7½ feet, directly connected to a 12 and 24 by 24 tandem-compound engine. This fan is delivering 48,900 cubic feet of air a minute, water gauge 2.2 inches.

One auxiliary fan, 10 by 6 feet (Murphy) belted to a 12 by 12 side-crank engine, running at 116 revolutions, 59,900 cubic feet of air a minute, water gauge 1.5.

Average thermometer reading—55 degrees.

Average barometer reading—30 inches.

Capell fan house 29 by 24 feet, of brick. Murphy fan house 23 by 16 feet of wood.

Distance of Capell fan house from shaft is 23 feet: Murphy fan-house is close to the shaft.

Length of fan-drift 29 feet, area 60 square feet.

One tandem compound-engine, 14 by 24 by 42 inches, driving endless-haulage system which takes the coal from the mine and delivers it onto the bank-head.

The tipple, screen and picking belt arrangement is in duplicate, each being capable of handling 75 tons of coal an hour. The full tubs are dumped by a revolving tipple into a steel weigh-tank suspended in a special scale-tank. The net weight of the coal being registered in the scale house. The coal after leaving the weigh-tank passes over a bar screen having an opening of two inches. The coal after passing through the bar screen is screened over a ¾ inch square-mesh knocking screen. This process separates the coal into three sizes, the coal passing through the bar screen and over the ¾ inch screen is delivered to a belt conveyor running across the screen house. The two inch coal and the large screen-coal are delivered to picking belts where the coal is cleaned and transferred to the cars.

The picking belt has a movable end so arranged that it can be lowered into the bottom of the 15 ton hoppers to prevent breakage. It is also used in an elevated position to load box cars.

One Norwalk compressor, air cylinders, 38 by 22 inches, steam cylinders, 20 by 40 and 36 inch stroke, capacity 3,500 cubic feet of free air a minute, at 80 revolutions.

One cross compound Walker compressor, air cylinders 36 and 22 inches, steam cylinders, 21 and 40 inches, stroke 48 inches, capacity 3000 cubic feet of free air a minute at 58 revolutions. This compressor is connected to a surface condenser, circulating-water being taken from a salt water pond, and discharged through the boiler house for flushing the ashes to the dump.

Six 232 h. p. Stirling water-tube boilers, pressure 150 lb. to square inch, forced draft.

One 110 by 48 inch Sheldon steel-plate fan directly connected to an 8 by 10 vertical centre crank engine, which furnishes 60,000 cubic feet of air a minute, when operating against a pressure of 1.5 oz of water. This draft-plant is used to facilitate the burning of washed-slack and coke-breeze which are used as fuel at this plant.

One brick-lined steel-plate stack 110 feet high and 8 feet internal diameter, is connected to these boilers.

Underground machinery.

There are thirteen 5 by 6 double friction drum engines. Two 7 by 9 inch double friction drum engines. One 6 by 8 inch double friction drum engine.

These engines haul the coal out of the levels and headways to the main haulage road.

One Northey pump 12 by 6 by 14 inches, at No. 3 lodgment.

One Northey pump 12 by 6½ by 14 inches, at No. 6 lodgment.

Two Northey pumps 4½ by 2½ by 4 inches, at No. 8 south.

One Cameron pump 10 by 8 by 4½ inches, at No. 9 lodgment.

Two Cameron pumps 10 by 4½ by 8 inches, at face of slopes.

One Dean pump 8½ by 5 by 10 inches, at No. 12 lodgment.

Pumps are operated by compressed air.

Maximum quantity of water that can be discharged in one hour is 24,000 gallons.

This colliery is supplied with water from North Sydney main line. In case of fire, connection can be made.

SYDNEY NO. 4 COLLIERY.

This colliery is located about two miles to the north-west of No. 3 colliery.

There are two miles of railroad from the main line to the colliery.

The bankhead and trestle-approach are about 800 feet long, reaching from the slope to the tracks. The mine cars are hauled out of the slope and backed down this incline by gravity to a hand-operated tipple. The coal passes over one bar-screen dividing it into two sizes, the large coal being delivered to a picking-belt 5 feet wide, 43 feet long, and having an adjustable jib. The smaller coal passing through the bar-screen is conveyed by a Robbin's endless rubber-belt conveyor to slack-hopper.

The coal is mined by electric, class E 6, Sullivan machines. There is also a number of hand-pick miners employed in the mine.

Plane haulage is used—diameter of haulage rope ⅞ inch. Pitch of slope one in eleven. Weight of empty car 1080 lb. capacity one ton—number of cars on rake, 20. Total length of slope 3,330 feet, width 10 feet.

Thickness of seam from three to five feet, coal is soft. The mine is free from gas and is damp—roof and floor are shale, direction of true dip, east.

Method of working is bord-and-pillar: width of rooms 20 feet, width of pillar 20 feet. The pillars are increased according to cover. Cover at face of slope, 233 feet.

Size of timber is 4½ inches at the small end. System of timbering is props-with-caps, sometimes props-with-booms, according to the condition of the roof.

There are two sections in the mine, north side and south side. The main slope is the intake, and the air is split at the bottom of the slope and returns north and south to the fan-shaft. Board stoppings and stone stoppings, and the ordinary tarred brattice cloth are used.

The output during the year was 116,497 tons—an increase over the previous year of 11,144 tons. Of this amount, 13,870 tons were mined in pillars.

There were 25,138 lb. of bull-dog compressed powder and 692 lb. of Monobel used during the year.

There are 330 men employed at the colliery, of which number there are 183 skilled and 81 unskilled in the mine, and 20 skilled and 36 unskilled on the surface. There are also 38 boys employed, 36 of whom are in the mine, and 2 on the surface.

Development Work.

		Total
No. 2 level south	400 feet	1190 feet
No. 3 " "	380 "	1140 "
No. 4 " "	760 "	1120 "
No. 5 " "	460 "	730 "
No. 6 " "	300 "	300 "
No. 5 " north	470 "	470 "
No. 6 " "	210 "	210 "
Main deeps	930 "	3330 "

Surface Machinery.

One haulage engine 16 by 24 inches, drums 6 feet diameter, 2½ feet wide.

One 100 h. p. Lancashire boiler.

Two 5 by 20 inch Matheson return-tubular boilers with steel smoke stack. These to replace two monarch boilers placed when development work was commenced.

One artesian well for boiler feed pump, 4 inches diameter, 127 feet deep, lined with 3½ inch pipe.

One 14 inch bore-hole 251 feet deep lined with 8 inch wrought iron pipe cemented in hole, to be used as a pump discharge below No. 6 lodgment, 3,200 feet from face of slope.

One 4 inch bore-hole lined with 3½ inch wrought iron pipe, 2850 feet from slope mouth on No. 6 level south, 85 feet from back slope, to convey a 500,000 C. M. armour cable to pumps, haulage engine, and cutting machines.

One overhead transmission line from power house to 4 inch bore-hole on surface. This 4 inch bore-hole is 217 feet deep.

One Sturtevant fan, 6 feet diameter, width of blade 3 feet.

One Sirocco fan, 4½ feet diameter, 5 feet wide, with engine 14 by 12 inches, Robb, automatic. This fan will produce 150,000 cubic feet of air a minute, water gauge 5 inches, present quantity of air in circulation, 54,322 cubic feet a minute, water gauge 1 3/7 inch. The airway is 4½ by 10 feet, length of fan-drift 130 feet, area 48 feet. Fan-shaft is 8 feet diameter.

Average thermometer reading—48 degrees.

Average barometer reading—30 inches.

Sirocco fan-house is of concrete, 27¾ by 9½ feet. Sturtevant fan-house is of wood. The distance of fan-house from air-shaft on the south side of the slope 77 feet, and on the north side 53 feet.

There are two 100 k. w. 250 volt Crocker-Wheeler direct-currant generators, directly connected to a 16 by 16 inch Robb engine.

Lamp house 30 by 16 by 8 feet, of brick with concrete floor.

Blacksmith and machine repair shop 60 by 32 by 12 feet.

Underground Machinery.

One 7 stage turbine pump, capacity 250 gallons a minute against a pressure of 125 lb. to the square inch, directly connected to a 55 h. p. motor, located at lodgment 1,700 feet from the mouth of slope.

Two Dean sinking-pumps, (triplex) motor driven, capacity 43 gallons a minute, geared to 5 h. p. motors.

One 20 h. p. pump, (turbine), located 3000 feet from the mouth of slope.

Two 5 h. p. worm-pumps, discharge 15,000 gallons an hour.

Thirteen double-friction drum motor-driven hoists, equipped with 11 h. p. motor.

Two double-friction drum motor-driven hoists, equipped with 22 h. p. motor.

Seventeen electric coal cutting, class E 6, Sullivan machines.

Switches operated by balance weight at mouth of slope. Swinging Samson-posts are placed at intervals in the slope to protect the sinkers. In case of fire, water is supplied from a temporary reservoir on the surface. The water supply is obtained from an artesian well.

The timber supply is obtained in Cape Breton.

Rails in Mine.

There are 40,106 feet of 18 lb. and 16,820 feet of 28 lb.

There are 337 Marsaut Safety Lamps in use. Traveling road in good condition.

Officers.

William Tobin, manager.

Robert Dickson, underground manager.

James Greenwell, overman.

J. W. Miles, overman.

Thos. W. Jardine, surface foreman.

Alex. McLean, engineer.

I visited this colliery 14 times during the year.

SYDNEY NO. 5 COLLIERY.

There are 349 men employed at this colliery of which number 176 skilled and 134 unskilled are employed in the mine, and 15 skilled and 24 unskilled are employed on the surface. There are 25 boys employed 21 of whom are in the mine, and 4 on the surface.

The output during the year was 134,278 tons, as follows: pillars, 65,328: rooms, 32,782: narrow places, 36,168 tons.

There were 31,387 lb. of bull-dog compressed powder used.

The seam is 5½ feet thick, soft coal, gaseous. The roof and floor are shale: the mine is damp, pitch one in eleven, direction of true dip east.

Method of working, bord-and-pillar: width of room 18 feet, pillars 24 feet thick.

Size of timber used is 4½ inches, small end. System of timbering is props-with-cap, sometimes props-with-booms, according to condition of roof.

There are two sections in the mine: the north side of the mine is ventilated by the return from No. 1 colliery, one continuous current passing around the working faces thence to fan shaft.

The south side is ventilated by a separate split from the main shaft. Quantity of air in circulation 73,000 cubic feet a minute. Board stoppings, stone stoppings, and asbestos brattice cloth are used. Traveling road is in good condition.

Development work.

Main level south	585 feet.
Sullivan's level north	528 feet.
Deeps off Sullivan's level	490 feet.
No. 1 headway off Sullivan's level	396 feet.
No. 2 headway off Sullivan's level	132 feet.
No. 5 headway off South level	390 feet.
Inside headway off south level	215 feet.
No. 5 south deeps	330 feet.
Inside deeps, south	100 feet.

Surface Machinery.

This mine is entered by a shaft 360 feet deep, 10 feet diameter. Coal and men are hoisted in this shaft by a directly conected engine 14 by 36 inches. The pumping shaft 10 feet diameter, equipped with a separate hoisting engine and a man-cage in case of an accident to the main shaft. There is a connection between this mine and No. 1 colliery.

The coal is all hauled from No. 1 main north-level and main south-level, by an endless rope, driven by a 75 h. p. 240 volt direct current Canadian Westinghouse & Jenckes Machine Company haulage-gear. Rope is ⅞ of an inch in diameter. Weight of empty car 850 lb.; capacity 1500 lb; 30 cars attached to rope by grabs, the road is level. The load in the shaft is 3,734 lb.

Walker detaching hooks and safety catches in pulley frame.

Pit-head and bank-head are of wood.

The loaded cars are pushed by hand from the cages over a platform scale and onto a hand-operated dump-tipple which delivers the coal to a pair of shaking screens 21 feet long by 5½ feet wide. The cam shaft operating the screens runs at 88 revolutions a minute. The upper screen is furnished with a set of blank plates for making run-of-mine, and perforated plates with 2½ inch holes for making screen coal, and a similar screen underneath this, furnished with ¾ inch holes, divides the coal into slack and nut.

At right angles to the screens are two picking belts, each 47 feet long with a 20 feet adjustable jib arranged to lower into the bottom of a 15 ton coal-hopper. One of the picking belts, 5 feet wide receives the screened coal, and the second belt which is 4 feet wide receives nut coal. This allows these two classes of coal to be picked—these belts run at 40 feet a minute and the driving sprockets are operated by a worm-and-worm gear. At the end of these belts there is a hinged, adjustable chute, which receives the coal from the picking belts and delivers it into box cars.

All the machinery in the screen house is driven by a 35 h. p. 240 volt, type S. Westinghouse direct-current motor.

Underground Machinery.

One Elliott pump 30 by 48 inches, at shaft bottom, operated by steam : maximum quantity of water that can be discharged in an hour, 18,000 gallons.

Rails in Mine.

There are 1,100 feet of 12 lb. 49,820, of 18 lb. and 12,160 feet of 28 lb.

Water Supply.

Connection is made with hydrant on water main for fire protection. The water supply is obtained from Pottle's Lake, North Sydney.

The smoke-house is 24 by 14 feet, 8 feet post.

The Nova Scotia Steel & Coal Company's mine officials and workmen go through a course of training (two officials and two men at a time) in their turn, in the smoke house, with the Draegar breathing-apparatus, once a week, for half an hour.

Officers.

Robert Robertson, manager.
John W. Marshall, underground manager.
George Slavin, overman.
Andrew Bailey, overman.
Fred McDonald, overman.
Alex Boyde, surface forman.

I visited this mine fifteen times during the year.

McKAY MINE.

This mine is operated by the Colonial Coal Company.

There are 61 men employed, 49 in the mine and 12 on the surface.

The output during the year was 29,081 tons—an increase of 12,017 tons over last year.

There were 10,500 lb. of bull-dog powder used during the year.

Method of working is bord-and-pillar: rooms 20 feet wide, pillars vary in thickness from 12 to 20 feet, according to cover. There are 24 working places in the mine, in two sections north and south.

System of timbering is props-and-caps, sometimes props-and-booms, according to condition of roof. Size of timber is 5 inches small end. The timber is Cape Breton product.

This mine is about two miles to the westward of North Sydney. The seam is 4 feet thick, soft coal, free from gas. The roof is hard clay and sandstone, and the floor is fire clay. The mine is damp, pitch of true dip north 51 degrees east. The pitch of the slope is 10 degrees 30 minutes, length of slope 1,126 feet, width 9 feet.

Plane haulage is used: size of rope ⅞ of an inch: weight of empty cars, 750 lb. capacity 1,400 lb.

There are in the mine 1,200 feet of 28 lb. 600 feet of 21 lb. 314 feet of 18 lb. and 15,281 feet of 12 lb. rails.

Surface Machinery.

One Sheldon fan, 6 feet in diameter: width 3½ feet, capacity 20,000 cubic feet a minute, connected direct. There are 9,000 cubic feet of air a minute circulating in one continuous current: size of air ways 5 by 6 feet. The fan is directly along side shaft. The ordinary brattice cloth and board stoppings are used. Size of fan house 12 by 9½ feet with 8 feet post.

One fan engine 6 by 9 inches.

One upright boiler of 80 h. p. One Gates tubular boiler, 12 h.p.

One hoisting engine 7 by 12 inches, made by Wilson & Co., Liverpool.

One 60 h. p. Leonard Ball engine 19 by 12 inches, belted to a 45 kwt. Westinghouse generator. All the buildings on the surface are lighted by electricity and the mine is supplied with electrical power.

Underground Machinery.

Two Fairbanks-Morse duplex pumps, 6 by 4 by 6 inches, 700 feet from the surface, operated by steam. Maximum quantity of water that can be discharged, 6,480 gallons an hour.

One Sullivan electric chain-coal-cutting machine.

One bar screen 15 by 14 feet, ¾ inch square mesh.

Bankhead is of wood.

The water supply is obtained from Pottle's Lake, North Sydney.

The men work with open lights.

Swinging samsons are placed in the slope at intervals.

In case of fire, connection can be made to hydrant on water main.

Officers.

John A. Roy, manager.

David Rorison, underground manager.

James Wier, engineer.

I visited this mine twelve times during the year.

A briquette plant is under construction for the purpose of converting the slack coal into a patent fuel. The size of the building containing this plant is 45 by 33 feet, 25 feet post. There is also an ell of 12 by 30 feet for the motor.

This plant has a capacity of 10 tons an hour, and is electrically driven, having a motor of 75 h. p. The coal and pitch are crushed separately and dropped into pockets whence they are conveyed by elevators to distributing tables. When the mixture leaves the tables it is dropped into the disintegrator, then conveyed by an elevator to a mixer where it is heated to melt the pitch. Then it is conveyed by a spiral conveyor to the press where the briquettes are finished.

THE COLONIAL MINE.

This mine is operated by the Colonial Coal Company.

From the 1st of October 1910 to the 18th of November 1910 there were 28 miners working, 8 men on the surface. From the 18th of November 1910 to the 30th of September 1911 there were 4 miners working and 4 men on the surface.

The output during the year was 3,488 from rooms, 962 tons, from narrow places, making a total of 4,450 tons.

There were used 1,251 lb. of bull-dog compressed powder.

Development.

No. 4 level south	150 feet
No. 5 level south	120 feet
Headway driven off No. 3 level north	100 feet

There are 20 working places in the mine, in two sections, north and south.

Length of slope 1320 feet, 9 feet wide. Direction of true dip south 80 degrees east. Thickness of seam 4 feet 9 inches: coal is soft, the mine is damp and no spraying system is necessary. The roof is of sand stone and the floor fire clay.

The method of working is bord-and-pillar: rooms 20 feet wide, pillars from 12 to 20 feet, according to cover.

The system of timbering is props-and-caps. Where roof is bad, props and booms are used. Minimum diameter of props 5 inches.

The mine is about half a mile from Little Bras d'Or bridge on the Bras d'Or Lake. The mouth of the slope is about 200 feet from the water, and for vessels drawing up to 19 feet, the shipping situation is unexcelled. The new extension of the I. R. C. is within half a mile of the mine.

Rails in Mine.

There are in the mine 9,900 feet of 28 lb. and 2,240 feet of 12 lb.

Surface Machinery.

One steel-plate fan, blast wheel, 64 inches in diameter, connected direct to a 10 h. p. Kalamazoo vertical-engine. This fan produces 20,000 cubic feet of air a minute, water gauge 1.8 inches.

Quantity of air in circulation 17,500 cubic feet a minute. The ordinary brattice cloth is used to conduct the air to the working faces.

The boiler plant consists of 2 return tubular boilers of 80 h.p. each.

One hoisting engine, 50 h. p.

One Flory engine, 10 by 12, double cylinder, friction drum.

One Leonard-Ball automatic cut-off engine. This engine will develop 60 h. p. at a speed of 250 to 300 revolutions a minute.

One engine house 12 by 36 feet, with 9 feet post.

One stable 20 by 30 feet, with 12 feet post.

One house over slopes 100 by 10 feet, with 7 feet post.

One magazine 8 by 10 feet.

One house over wharf 40 by 60 feet, post 6 feet 6 inches.

Underground Machinery.

Two Cameron pumps—one 12 by 13 by 7 inches, capacity 200 gallons a minute: one 12 by 13 by 6 inches, capacity 150 gallons a minute. Maximum quantity of water that can be discharged in an hour 6,000 gallons. Capacity of reservoir on surface, 187,500 gallons.

A trip haulage is used, 5 cars on rake : weight of empty cars 840 lb., capacity 1900 lb.

Open lights are used.

Swinging samsons and switches are placed at intervals in the slope.

The works are supplied with Phœnix fire extinguishers.

I visited this mine twelve times during the year.

Officers.

Thomas Carr, underground manager and acting manager.

William McGillivray, chief engineer.

A briquette plant, similiar to that which is being installed at McKay mine, having a capacity of 20 tons an hour, is under construction.

SYDNEY COAL COMPANY.

The output during the year at this colliery was 4,000 tons, a decrease of 500 tons from last year.

There were 800 lb. of bull-dog compressed powder used during the year.

There are 16 men employed, 8 miners and 4 unskilled workers in the mine, and 4 unskilled men on the surface.

There are 20 working places in the mine.

There are 1,200 feet of 20 lb. rails, 1,200 feet of 18 lb. rails, and 5,520 feet of 12 lb. rails in the mine.

Method of working is bord-and-pillar: rooms 18 feet wide: pillars from 4 to 8 feet thick. Rooms are turned off at right angles and driven to the rise. Thickness of cover is about 50 feet.

System of timbering is props-and-caps.

The airways are 4½ by 10 feet, the air shaft 8 feet in diameter. About 6,000 cubic feet of air a minute is circulating in one continuous current: ventilation is natural. Ordinary brattice cloth and wooden stoppings are used.

The water supply is obtained from a small brook near by.

The mine is at Indian Cove near North Sydney. It is entered by a level 10 feet wide, driven from the crop 2,950 feet. The seam is 4 feet 6 inches thick, pitching 7 degrees, direction of true dip north 10 degrees east. The coal is soft and free from gas. The roof is hard shale, floor, fire clay. The mine is damp with natural drainage.

Surface Machinery.

One double horizontal engine, 20 h. p.

One upright tubular boiler, 30 h. p.

A tail rope haulage is used. Size of rope ⅝ of an inch. Weight of empty car, 750 lb.: capacity of car 1,750 lb.

I visited this Colliery 10 times during the year.

Hugh Campbell is underground manager and acting manager.

Open lights are used.

DOMINION NO. 1 COLLIERY.

There are 581 men employed at this colliery of which number there are 289 skilled and 197 unskilled employed in the mine, and 95 men on the surface. There are 63 boys employed, 49 of whom are employed in the mine and 14 on the surface.

The output during the year from rooms was 341,474 tons, from narrow places 109,243 tons, and from pillars 134,241 tons; making a total output of 584,958 tons which is an increase of 11,593 tons over last year.

There were 82,331 lb. of bull-dog compressed powder and 7,413 lb. of Monobel powder used during the year.

Coal is mined by machines, there being 9 Jeffrey air drills, 15 Hardy shearing machines, and 19 undercutting machines of the Ingersoll type, in use.

Method of work is bord-and-pillar, rooms being 20 feet wide: thickness of pillars varies from 25 to 40 feet, according to cover: most of the pillars are now 40 feet thick.

Size of timber used is 5 inches, small end. Method of timbering is props-and-caps, sometimes props-and-booms, according to the condition of the roof. The timber is procured in Nova Scotia.

The mine is divided into two sections, south-side and angle deep. There are 300 men on the south side and 210 on the angle deep.

Quantity of air in circulation 158,000 cubic feet a minute. The air is divided at bottom of fan-shaft, one split going south and one going to angle deep.

The stoppings are built of stone, bricks and boards. Brattice cloth manufactured by the South Wales Brattice-Cloth Company, is used.

Diameter of fan-shaft, 11 feet: length of fan-drift, 10 feet: area 36 square feet. Approximate area of air-ways, 100 square feet.

The Ackroyd & Best safety lamps are in use, the number of which is 650.

The mine is entered by a shaft sunk on the Phalen seam.

Depth of shaft 154 feet, 10½ by 24 feet.

The shaft is divided into two compartments; one of these compartments is used for a man-shaft, and is walled off from the coal shaft. The depth of material shaft is 135 feet, 11 by 18 feet. Depth of fan shaft 143 feet, diameter 11 feet.

The mine is gaseous.

Roof and floor are shale, pitch one in fourteen.

Direction of true dip north 89 degrees east.

The coal is 8 feet thick. The mine is damp except in a few places and accumulations of dust are loaded out, there is no spraying system in the mine.

Development work during the year.

4,108 lineal feet of deeps were driven, 14,296 feet of levels, and 15,607 feet of headways.

No. 10 level north off angle deep	794	feet
No. 11 " " " " "	1,590	"
No. 12 " " " " "	121	"
No. 12 " south " " "	270	"
No. 12 " north " south deeps	839	"
No. 13 " off No. 12 north off south deeps	1,408	"
No. 12 counter levels off south deeps	1,056	"
No. 10 north counter level off angle deep	803	"

Headways.

No. 4 headway off No. 10 north off angle deeps	171	feet
No. 5 " " " " " " " "	631	"
No. 1 " " " 11 " " " "	839	"
No. 2 " " " " " " " "	858	"
No. 3 " " " " " " " "	556	"
No. 4 " " " " " " " "	263	"
No. 6 " " " 11 level north off south deeps	269	"
No. 4 " " " 12 " " " " "	124	"
No. 5 " " " " " " " " "	753	"
No. 6 " " " " " " " " "	356	"
No. 2 " " " 13 " " " " "	218	"
No. 3 " " " " " " " " "	682	"
No. 4 " " " " " " " " "	95	"

ANGLE DEEPS.

Main deep	934	feet
Back "	1006	"
Angle barrier deep	1060	"

Deeps off No. 13 levels north off south deeps:—

Main deep.............. ....121 feet
Back " ....293 "

The angle deep is 5,300 feet under the sea, there are 410 feet of cover at the face of the deeps.

No. 9 levels north off angle deep is to the cover line, 3,500 feet from the deep.

No. 10 levels north off angle deep, is 2,800 feet from the main deep.

There are 240 feet of cover at the face of levels.

No. 11 level, north off angle deep is in 2,000 feet from the deep, cover at face 350 feet, these levels are under the sea.

Officers.

Manager, John Munroe.

Under-ground manager, James R. McNeil.

Asst. under-ground manager, Hector Campbell.

Overman, Andrew J. Scott.

Overman, John C. Nicholson.

Overman, Archie F. Ferguson.

Overman, Andrew Irvine.

I visited this colliery twenty-four times during the year.

Surface Machinery.

There are three fans at this colliery, one Dixon fan of the Guibal type, 24 feet diameter, width of blades 6 feet 6 inches driven by an 18 by 24 inch Buckeye engine. This fan is also provided with an auxiliary 16 by 30 inch Jencke's engine, which, in the event of an accident to the Buckeye, can be coupled up in a few minutes.

The other two fans are Murphys, and are held in reserve in the event of it being at any time necessary to stop the Dixon. One of the Murphys is 12 feet in diameter, width of blades 6 feet, driven by an Atlas engine 19 by 16 inches. The other is 8 feet in diameter; width of blades 5 feet, driven by a 10 by 12 inch Matheson engine.

Dickson fan-house, 68 by 29 feet, of brick. The size of the 12 foot Murphy fan-house is 23 by 15 feet, of wood. The 8 feet Murphy fan-house is 16 by 12½ feet, of wood.

Fans are connected directly to the engine.

Actual distance of fan-house from shaft is 10 feet.

Average water gauge is 2.2 inches.

Average thermometer reading—56 degrees.

Average barometer reading—29.90 inches.

One coal hoisting engine 20½ by 54 inches.

One man engine 15 by 30 inches.

Two haulage engines 26 by 60 inches.

Three Ingersoll compressors each of them having a capacity of 2500 cubic feet of free air a minute.

One 100 k. w. electric 110 volt generating unit.

Two 8 by 10 inch Flory engines, and one 8 by 10 inch Jenckes. These three engines are in the mine.

Bankhead of wood, pithead frame is of steel.

Man-cage is equipped with an Omeroid detaching safety-hook.

Working load in the coal shaft is nine tons.

Above all landings on the deeps, are automatic safety switches.

The coal passes from the weigh-pan, over a 1¼ inch bar-screen, thence to shaker screens, ¾ inch mesh, thence to traveling picking-belts, 40 feet long by 5 feet wide.

Coal is conveyed to the boilers by a 14 inch Robbins belt-conveyor.

The boilers are 1696 rated h. p. made up of two 318 h. p. and five 212 h. p. Babcock & Wilcox boilers.

One Underwriters' fire-pump, capacity 500 gallons a minute. One Worthington fire-pump, capacity, 500 gallons a minute.

1200 feet of 2½ inch standard rubber hose and two hose reels with nozzles.

Chemical extinguishers of fire-king type are distributed throughout the surface buildings and in the mine.

A fire brigade of 35 members who train and practice regularly.

The water is supplied from Phalen's Brook, about a mile from the colliery.

Capacity of reservoir on surface is 8,000,000 gallons, located about a mile from the colliery.

There are five pumps in the mine, four of which are at a borehole on No. 9 south.

One McDougall turbine, 560 gallons a minute.

One McDougall turbine, 400 gallons a minute.

One Northey duplex 20 by 8 by 24 inches, 500 gallons a minute.

One Northey duplex 14 by 8½ by 10 inches, 300 gallons a minute.

One spare McDougall turbine, 550 gallons a minute, at bore hole on number 9 south.

McDougall turbines are operated by electricity. Northey's are operated by compressed air.

Maximum quantity of water that can be discharged in an hour, 105,000 gallons.

DOMINION NO. 12 COLLIERY.

The slopes are sunk on the Victoria seam, a half mile from the shore line. The seam is 6 feet thick, and the coal is hard, pitching about 10 degrees.

The system of working is bord-and-pillar, the rooms and pillars each being 20 feet wide to a depth of 400 feet, pillars will be 35 feet wide below this depth.

System of timbering is props-and-caps, sometimes props-with-booms, according to the condition of the roof. The minimum diameter for the small end of props is 5 inches.

The output during the year was 255,471 tons; 161,622 tons from rooms, and 93,849 tons from narrow places—increase of 136,020 tons over last year.

There were 24 tons of Monobel powder used during the year.

There are 361 men employed at this colliery, of which number there are 137 skilled and 171 unskilled employed in the mine, and 53 on the surface.

There are two sections in the mine, east and west, and 126 working places. There are 179 men working on the east side and 129 on the west side, there are 40 men working by night.

Development.

834 feet of deeps, 10,508 feet of levels, and 5,693 feet of balances, have been driven during the year.

No. 1 west levels driven	28	feet	total distance	1301	feet
No. 2 " " "	466	"	" "	1885	"
No. 3 " " "	422	"	" "	1875	"
No. 4 " " "	1000	"	" "	1394	"
No. 5 " " "	262	"	" "	448	"
No. 1 east levels "		"	" "	1250	"
No. 2 " " "	832	"	" "	2631	"
No. 3 " " "	1275	"	" "	2644	"
No. 4 " " "	683	"	" "	1575	"
No. 5 " " "	426	"	" "	529	"
Slopes were driven	417	"	" "	3200	"

Cover at face of slopes 505 feet; depth of water 20 feet.

Trip haulage, 18 boxes to a rake, capacity of box 2,000 lb. tare 850 lb. Haulage rope is one inch in diameter.

The mine is damp and no spraying system is necessary: roof and floor is of sandstone: seam is gaseous.

Lamps of the Ackroyd & Best safety type are in use, the number of which is 350.

2500 feet of the main slope has been relaid with 60 lb. rails, five curves of 100 feet radius driven and laid as landings, and eleven landings relaid with turns made from 60 lb. rails. Two 6 by 12 feet air-crossings were made over the deeps, and 3000 feet of 8 inch air-line laid from the compressor house on the surface, to No. 5 landing. 23 mining machines have been put in, (8 Ingersolls, 2 Rand and 13 Hardys.)

Rails in mine.

5,200 feet of 60 lb. rails, 1,100 feet of 30 lb. rails, and 46,700 feet of 18 lb. rails.

Two bore-holes have been put down about 3,000 feet from the slope-mouth. One has a diameter of 15 inches, it is down to the Victoria seam, a distance of 542 feet; the other is down to the Lingan seam, a distance of 1105 feet; this hole is 12 inches in diameter and is to be used for power lines to electric pumps that will be placed later.

The traveling-road is in good condition.

I visited this mine twelve times during the year.

Surface Machinery.

One Walker fan, 11 feet diameter, width of blades 4 feet, connected to a 95 h. p. Walker engine, size 15 by 30 inches, making 52 revolutions a minute, by five one inch ropes: the driver is 12 feet in diameter and the driven pulley 5 feet. The length of each rope is 55 feet. The engine house is of brick, 45 feet long and 15 feet wide. Length of fan drift is 20 feet, area 50 square feet, size of fan-shaft 14 by 16 feet. Size of air-ways 6 by 12 feet. The ordinary tarred brattice cloth and wooden stoppings are used. The air is divided once at the bottom of the shaft, one split going east and one going west: total quantity of air in circulation, 97,750 cubic feet a minute, water gauge 0.7 of an inch.

One electrically driven, cross-compound Rand compressor, capable of producing 3,300 cubic feet of free air a minute, operated by an 800 h. p. induction motor. One 1,800 h. p. 30 by 48 inches hoisting-engine has been erected.

One 600 h. p. Westinghouse induction motor, making 120 revolutions a minute at full load, and taking a potential of 6,600 volts, and 50 amperes a terminal. This is used to drive a cross-compound Rand compressor 19 by 32 by 30 inches, capable of compressing 3,300 cubic feet of free air a minute to a pressure of 80 lb. a square inch.

One 16 by 24 inch straight-line Rand compressor, with a capacity of 400 cubic feet a minute.

One 20 by 30 inch straight-line Ingersoll compressor, capacity 600 cubic feet a minute.

There are two 250 h. p. and two 210 h. p. boilers, three are constantly in use and one in repair.

One 30 by 48 inch hoisting engine—Corliss type—with 8 feet drums, built by the Vulcan Iron Works, Wilkes-Barre, Pa.

The screening plant has a capacity of 1500 tons a day. It consists of two tipples, two picking belts, one loading belt, and two double shaker-screens, one of the latter with a two inch opening and one with a three-quarter inch opening. Full and empty car-haul chains. This plant is driven by a five-turn continuous rope-drive. The engine is a 12 by 12 inch Goldie, making 250 revolutions a minute.

Shop fitted with lathe, shaper, drill-press, pipe and bolt threading machines and emery wheels, operated by a 6 by 6 inch upright engine, built by I. Matheson & Co., and making 250 revolutions a minute.

One 8 by 8 inch Robb-Armstrong engine making 120 revolutions a minute, supplies power to forge and carpenter shop.

One 6 by 8 inch Robb-Armstrong engine making 300 revolutions a minute, operates a temporary dynamo.

Underground Machinery.

One 18 by 8 by 24 inch Knowles pump, 2,100 feet from the surface. Three 7.5 by 4 by 10 inch pumps raise the water from the deeps to the large lodgment. These pumps are operated by air at a pressure of 75 lb. a square inch, and are capable of discharging 12,000 gallons an hour.

There are no dams in the mine.

There are two reservoirs on the surface, the larger having a capacity of 6,000,000 gallons, the smaller 500,000 gallons.

The water supply is from Kearney's Lake.

The fire protection service consists of one hose reel and 1500 feet of hose, one 500 gallon Northey duplex fire-pump, and 6 hydrants with a pressure of 60 lb. a square inch: one 40-gallon, Babcock, chemical fire-engine, built by the American-La France Fire Engine Co., of Elmira, N. Y. 34 chemical fire extinguishers in suitable places in the mine and on the surface.

Automatic switches and samson posts.

One Compressor house 48 by 78 feet, of brick and steel.

A rescue station 22 by 26 feet, of brick and steel.

The bankhead is of wood with concrete floor, and the roof and sides are covered with corrugated iron.

There are 49 double and 157 single dwelling houses, also the manager's, underground manager's, and engineer's houses.

There were no fatal accidents during the year.

Officers.

A. R. McDonald, manager.

James Connors, underground manager.

Thomas Kavanagh, overman.

A. R. McLellan, overman.

Melvin Larson, engineer.

Wm. White, surface foreman.

DOMINION NO. 14 COLLIERY.

The slopes are sunk in the Victoria seam, one mile to the east of No. 12 colliery and about a half mile from the shore. The two slopes are down a distance of 2,500 feet and are 12 feet in width. Direction of true dip north 38 degrees 30 minutes east: pitch 12 degrees Thickness of seam 6.5 feet. The seam is gaseous. The mine is damp and no spraying is necessary. The roof is bituminous shale and sandstone, and the pavement is an argillaceous slate covered with from two to four inches of fire clay.

The output during the year was from rooms, 58,538 tons and from narrow places 79,266 tons, making a total output of 137,744 tons, an increase of 102,559 tons over last year.

There were 26,724 lb. of Monobel powder used during the year.

Method of working bord-and-pillar, rooms and pillars each being 20 feet wide, to a depth of 290 feet, and the pillars 35 feet below this depth.

System of timbering props-and-caps, and booms-and-props where necessary. The minimum diameter of small end of props is 5 inches.

There are 383 men employed at this colliery of which number there are 137 skilled and 182 unskilled, employed in the mine, and 64 on the surface.

Development.

No. 1 east	levels	driven	865	feet,	total	distance	1767	feet
No. 2	"	"	928	"	"	"	1257	"
No. 3	"	"	710	"	"	"	710	"
No. 4	"	"	90	"	"	"	90	"
No. 1 west	"	"	613	"	"	"	1250	"
No. 2	"	"	805	"	"	"	1212	"
No. 3	"	"	660	"	"	"	660	"
No. 4	"	"	200	"	"	"	200	"
Lodgment	"	"	948	"	"	"	948	"
Main and back deep		"	900	"	"	"	2500	"

Thickness of cover at face of slope undersea 432 feet, depth of water 16 feet. The total distance of the deeps from the shore is 1025 feet, depth of cover at No. 3 east and west levels, is 310 feet, and depth of water 10 feet.

During the year, four balances have been driven a distance of 455 feet each, and eight balances a distance of 450 feet each; making a total of 1800 feet of deeps, 11,638 feet of levels, and 5,420 feet of balances.

The main slope has been relaid with 60 lb. rails. Seven landings were relaid with turns made from 60 lb. rails, and four curves driven on the east landings. Stables were built in the mine. Two air-crossings of brick and cement were made. An 8 inch air-line was extended from No. 1 to No. 4 landing, a distance of 1400 feet, and 4,000 feet of 5 inch air-line laid in the levels. Five new balances were put in operation, and 23 mining machines, (7 Ingersoll and 16 Hardy machines) and one donkey engine erected.

Rails in Mine.

5,000 feet of 60 lb. 8,000 feet of 30 lb. and 62,000 feet of 18 lb.

A trip haulage with a rake of 12 boxes is used. Capacity of box, 2,000 lb. tare 850 lb. Size of haulage rope ⅞ of an inch.

I visited this mine twelve times during the year.

Surface Machinery.

One Walker fan 11 feet in diameter, width of blades 6 feet; connected by a rope drive to a temporary 30 h. p. induction motor, the driver being 2 feet in diameter and the driven pulley 7 feet. The distance from the centre of motor-shaft to centre of fan-shaft is 30 feet. The length of fan-drift is 20 feet and the area 140 square feet. The fan-shaft is 10 by 14 feet. The distance of fan from fan-shaft is 20 feet. Size of air-ways 12 by 6.5 feet. The air is divided once at the bottom of the slope: one split going east and one going west. Total quantity of air in circulation, 95,000 cubic feet a minute. The ordinary oiled brattice cloth and board stoppings are used. Average water gauge 1 inch.

Ackroyd & Best safety lamps are used, of which number there are 360.

One electrically driven, cross-compound, Rand compressor 30 by 19 by 30 inches, compressing 3300 cubic feet of air a minute to a pressure of 80 lb. a square inch operated by a 600 h. p. Westinghouse induction motor. This motor makes 120 revolutions a minute, at full load, takes a potential of 6,600 volts, and 50 amperes a terminal.

There are two 100 h. p. Robb-Munford boilers in use, and two 50 h. p. I. Matheson & Co., boilers in repair.

One 14 by 20 inch hoisting engine built by the Jenckes Machine Co.

Two picking belts and one loading-belt driven by a 20 h. p. Westinghouse induction motor.

Two shaker screens driven by a 20 h. p. Westinghouse induction motor.

Two revolving tipples driven by a 20 h. p. C. G. E. Co., induction motor.

The main car-haul driven by a 30 h. p. C. G. E. Co., induction motor.

A 15 h. p. induction motor of the C. G. E. Co., type, is used to haul the empty trip over the brow.

A colliery office 32 by 25 feet, and a building 50 by 22 feet have been erected; 21 by 22 feet of the latter being used as a district superintendent's office and telephone central, and the remainder as firemen's club rooms and hose-reel house.

A machine shop, 36 by 45 feet, extension to forge of 25 by 24 feet: ambulance house, 33 by 13 feet: stables, 27 by 37 feet: compressor house, 48 by 78 feet: fan-engine house, 17 by 50 feet, the last two, of brick, have also been added.

The bankhead is of wood, roofed and shingled with corrugated iron, and has concrete floor.

Underground Machinery.

One 16 by 9 by 33 inch Cameron pump, 1600 feet from the surface. Three 7 by 4.5 by 12 inch Cameron pumps, raise the water from the deeps to the lodgment. These pumps are operated by air at a pressure of 70 lb. a square inch, and discharge about 12,000 gallons an hour.

There are two small temporary dams in the mine. A reservoir on the surface holds about 2,500,000 gallons.

The traveling road is in good condition.

The fire protection service consists of one hose reel and 1500 feet of hose, one 500 gallon Underwriters' fire-pump: 4 hydrants with a pressure of 100 lb. a square inch; also one Babcock chemical fire-engine, built by the American LaFrance Fire Engine Co., Elmira, N. Y.: 18 chemical fire extinguishers at suitable places in the mine and on the surface. The water supply is from Kearney's Lake.

There are 44 single and 39 double dwelling houses, and the manager's, underground manager's and engineer's houses.

There were three fatal accidents during the year, one of these was a lineman, on the surface.

Officers.

Bart. Connors, manager.

Wm. R. McDonald, underground manager.

John P. McIntyre, overman.

Joseph Pickup, overman.

Archie McDonald, engineer.

One 12 inch bore-hole, to be 700 feet, is down 298 feet. This hole is for No. 14 and No. 15 collieries, and is 1200 feet north of No. 14 colliery slopes.

One 18 inch bore-hole 50 feet from the above, is down to No. 2 east level, 292 feet. These holes are to be used for power lines to electric pumps that will be placed later.

Dominion No. 15 Colliery.

The slopes are sunk on the Lingan seam about 3,700 feet from the shore line and 400 feet east of No. 14 colliery, running parallel with No. 14 slopes. The length of slope is 1,660 feet and width 12 feet. Direction of true dip north 39 degrees 30 minutes east. The seam is 5.5 feet thick and the pitch is 20 degrees. The mine is damp and no spraying system is necessary. The roof is shale and clay with alternate bands of sandstone, and the floor is very hard clay. The seam is gaseous.

Method of working is bord-and-pillar, the rooms and pillars each being 20 feet wide.

System of timbering is booms-and-props, and props-and-caps. The minimum diameter of small end of props is 5 inches.

The output was 27,524 tons, all from narrow work.

Development.

The main deep advanced	1000 feet.
The back “ “	750 “
No. 1 east levels	800 “
No. 2 “ “	500 “
No. 1 west “	800 “
No. 2 “ “	300 “
Lodgment	75 “
No. 1 balance off No. 1 east level	450 “
No. 1 “ “ No. 2 “ “	200 “
No. 1 “ “ No. 1 west “	450 “
No. 1 “ “ No. 2 “ “	50 “

Total of 1750 feet of deeps, 2475 feet of levels, and 1150 feet of balances.

There are 14 working places in the mine, in two sections.

There were 7,500 lb. of Monobel powder used during the year.

The mine is working double shift, the same number of men being employed on each shift as follows :

No. 1 east	8 men ;	No. 1 west	9 men ;	on surface 27 men.
No. 2 "	22 "	No. 2 "	21 "	
Deeps	9	Lodgment	2 "	
	39		32	

Ackroyd & Best safety lamps are used, of which there are 147.

Rails in mine.

1600 feet of 60 lb.: 9,200 feet of 18 lb.

Trip haulage is used, averaging 5 boxes with a capacity each of 2000 lb. and tare 850 lb.

800 feet of the slope has been relaid with 60 lb. rails : 2000 feet of 5 inch pipe has been laid for air and discharge lines to the pumps underground. Underground stables for six horses, and a new air crossing 12 by 7 feet is about completed.

One 14 inch borehole, 400 feet north of the slope, is down 168 feet.

The traveling road is in good condition.

I visited this mine twelve times during the year.

Surface machinery.

One Sturtevant fan (temporary) 11 feet in diameter, width of blades 2 feet. This fan is at the mouth of the back slope. It is connected to a 40 h. p. engine by a belt-drive. The air shaft 12 by 14 feet, in the clear, and 42 feet deep has been concreted from top to bottom. The airways are 5 by 10 feet. The air is divided once at bottom of the slope, one split going east and one west. Total quantity of air in circulation, 45,000 cubic feet a minute. Average water gauge .3 inch. The ordinary oiled brattice cloth and board stoppings are used.

One 150 h. p. 14 by 20 inches Jenckes haulage-engine.

One Norwalk compressor with compound air end, capacity 2000 cubic feet a minute. Air is now supplied from No. 14 colliery: this compressor is used in case of accident.

Four Matheson & Co. boilers.

The fire protection service consists of one hose reel and 300 feet of hose. One 500 gallon Underwriters' fire pump, capable of maintaining a pressure of 100 lb. the square inch on 6 hydrants, and 5 fire kings. The water supply is obtained from Kearney's lake and is pumped from No. 12 to this colliery.

A temporary fan-house has been erected, and one 14 by 22 feet haulage-engine house. Temporary office 10 by 12 feet: wash house 30 by 60 feet: lamp house 14 by 22 feet: blacksmith shop 28 by 48 feet: carpenter shop 28 by 48 feet: and hose reel house, have been built. The temporary bankhead was extended 70 feet, and the railway siding 600 feet. The bankhead is of wood.

Underground machinery.

One pump 14 by 7 by 24 inches, an auxiliary 14 by 6.5 by 18 inches is provided in case of emergency. These pumps are 100 feet from the surface. Two 7 by 4.5 by 12 inch Cameron pumps raise the water from the deeps to the lodgment. These pumps are operated by air at a pressure of 70 lb. the square inch, and are capable of discharging 10,000 gallons an hour. There are no dams in the mine. A reservoir on the surface has a capacity of 2,500,000 gallons.

Two 7 by 10 inch Jenckes engines.

There are 42 dwelling houses.

There have been no fatal accidents during the year.

Cfficers.

M. S. Beaton, manager.

Henry Oliver, underground manager.

Robert Lorimer, overman.

E. A. Lind, overman.

DOMINION NO. 16 COLLIERY.

This mine began operations on January 17th, 1911. Two slopes are sunk on the Lingan seam, about 400 feet east of No. 12 colliery and running parallel to No. 12 slopes. The seam is about 5 feet 5 inches thick; the coal is hard and is pitching about 20 degrees. Direction of true dip north 33 degrees east. The roof is of shale and clay with alternate bands of sandstone, the floor is of very hard clay. The seam is gaseous. There is no spraying system and the mine is damp. Length of slope is 1000 feet, 12 feet wide.

Method of working is bord-and-pillar, the rooms and pillars each being 20 feet wide.

System of timbering is booms-with-props and props-with-caps, minimum diameter of small end of props is 5 inches.

The output since the mine began is 8,788 tons.

The main deeps have advanced 1000 feet. The air-shaft-levels, east and west, have been driven 150 feet from the slopes. No. 1 level west has been driven 125 feet, and No. 1 level east 100 feet. An air-shaft 65 feet deep has been sunk to the air-shaft-level: 250 feet of air course have been driven from the air-shaft-level, leaving a barrier pillar of 150 feet between the main deep and air course. There have been 950 feet of 5 inch pipe laid for air and discharge lines to pumps.

There were 2,485 lb. of Monobel powder used during the eight and one-half months of operations.

There are 7 working places in the mine and two sections, east and west.

In No. 1 east there are 9 men employed, in No. 1 west 8 men, and 8 men in the deeps. The mine is worked double shift and the same number of men are employed at night. There are also 17 men on the surface.

Ackroyd & Best safety lamps are used of which there are 50.

Rails in mine.

5,736 feet of 18 lb.

Trip haulage of 3 boxes with a capacity of 2000 lb. each, and of 850 lb. is used.

3,300 feet of 5 inch air-line has been laid from No. 12 colliery.

One 14 inch bore-hole for this colliery about 500 feet north of No. 12 colliery slopes, is down 29 feet.

The traveling slope is in good condition.

I visited this mine seven times during the year.

There are 6000 cubic feet of air a minute in circulation, produced by a steam jet. A fan shaft 12 by 14 feet has just been completed. The ordinary oiled brattice cloth and board stoppings are used. The airways are 5 by 10 feet.

Surface Machinery.

One 35 h. p. 7 by 10 inch Jencke's hoisting engine.

One 80 h. p. Robb-Mumford boiler.

A temporary bankhead 100 feet long from knuckle to tipple, of wood: wash-house 15 by 30 feet: stables 12 by 24 feet: lamp-house 12 by 15 feet: office 10 by 12 feet: boiler-house 15 by 35 feet: engine-house 20 by 32 feet, have been erected since January 1911.

The fire protection service consists of 4 fire-kings, and water buckets placed in different buildings. The water supply is from the same source as that of No. 12.

Underground Machinery.

One 12 by 6 by 18 inch Blake pump, 600 feet from the surface: two 7 by 4.5 by 12 inch Cameron pumps, raise the water from the deeps to a temporary lodgment. These pumps are operated by air at a pressure of 75 lb. the square inch, and discharge 7,000 gallons an hour. There are no dams in the mine. Power for the pumps is from No. 12 colliery. The water supply is from the reservoirs at No. 12 colliery.

There have been two fatal accidents since operations commenced.

Officers.

M. S. Beaton, manager.

Ben Wilson, underground manager.

Angus R. McIsaac, overman.

Quantity timber used underground.

DOMINION NO. 12.

Pits props	258,924 lineal feet
Booms	32,189 lineal feet
Sleepers	121,212 lineal feet

DOMINION NO. 14.

Pit props	159,440 lineal feet
Booms	99,211 lineal feet
Sleepers	57,544 lineal feet

DOMINION NO. 15.

Pit props	19,694 lineal feet
Booms	50,323 lineal feet
Sleepers	18,874 lineal feet

DOMINION NO. 16.

Pit props	6,286 lineal feet
Booms	23,629 lineal feet
Sleepers	3,720 lineal feet

DOMINION NO. 1.

Pit props	674,568 lineal feet
Booms	25,881 lineal feet
Sleepers	118,760 lineal feet

SYDNEY NO. 1 COLLIERY.

Pit props	732,546 lineal feet
Booms	434,201 lineal feet
Sleepers	115,380 lineal feet

SYDNEY NO. 2 COLLIERY.

Pit props	229,035 lineal feet
Booms	213,804 lineal feet
Sleepers	37,206 lineal feet

SYDNEY NO. 3 COLLIERY.

Pit props	650,620 lineal feet
Booms	241,770 lineal feet
Sleepers	112,828 lineal feet

SYDNEY NO. 4 COLLIERY.

Pit props	273,870 lineal feet
Booms	156,601 lineal feet
Sleepers	55,840 lineal feet

SYDNEY NO. 5 COLLIERY.

Pit props	260,271	lineal feet
Booms	260,870	lineal feet
Sleepers	32,744	lineal feet

MCKAY MINE.

Pit props	35,636	lineal feet
Booms	5,450	lineal feet
Sleepers	7,200	lineal feet

COLONIAL MINE.

Pit props	6,600	lineal feet
Sleepers	2,400	lineal feet

SYDNEY COAL CO.

Pit props and caps	4,200	lineal feet
Booms	720	lineal feet
Sleepers	1,440	lineal feet

I remain,
Yours truly,
NEIL A. NICHOLSON,
Deputy Inspector of Mines.

Report of Accidents in Coal Mines of Nova Scotia (Cape Breton, Northern district) Year ended September 30th, 1911.

No.	Date. 1910.	Mine.	Name.	Age.	Remarks.	Fatal
1	Oct. 15,	Dominion No. 14	Edward Noonan...	29	Laborer. Thrown from rapidly moving box. Compound fracture of both bones of leg.	
2	Nov. 28,	Sydney... “ 1	John Erickson.....	16	Loading box. Caught by full box on landing. Ribs broken and lung hurt.	
3	“ 30,	McKay Mine....	Ingram Carey.....		Miner. Permature explosion of shot. Face burned and one eye seriously injured.	
4	Dec. 3,	Dominion No. 1	Thomas Gouthero.	22	Road maker. Piece of coal fell from face. Leg broken and finger cut.	
5	Dec 7,	Sydney No. 3	Andrew Dawe.....	18	Runaway box knocked out timber. Was putting up timber, stone fell on him	1
6	Dec. 17,	Dominion No. 1	John E. Boutilier.	18	Driver. Leg caught between bow of shaft and box.	
7	Jan. 3, '11	Sydney No. 3	Eugene Reed.....	17	Laborer. Gas explosion.	1
8	“	“ “	James Messervey..	42	“ “ “	1
9	“	“ “	Arthur Amey......	20	“ “ “	1
10	“	“ “	Brian Murphy.....	21	“ “ “	1
11	“	“ “	J. Wade, (Mahoney)	22	“ “ “	1
12	“	“ “	Israel Parsons....	20	“ “ “	1
13	“	“ “	Harry Purchase....	28	“ “ “	1
14	“	“ “	A. F. Ferguson....	52	“ “ “	1
15	Jan. 11,	Sydney No. 4	John Stuart........	28	Shot firer. Piece coal fell from shot. Leg brk'n.	
16	Jan. 24,	Dominion “ 14	Archie Drover.....	26	Laborer. Fell off bank, a distance of 12 feet. Injury to brain.	

17	Feb.	6	Sydney	“	1	Peter Radcliffe....	16	Spragger. Piece of coal fell on hand. Finger taken off.	
18	“	7,	Sydney	“	1	Alex. McDonald..	15	Landing Boy. Hand caught between rope and drum of donkey. Thumb taken off.	
19	“	23,	Dominion	“	16	Thomas Hines....	23	Chainrunner. Foot slipped off box. Leg broken.	
20	Mar.	2,	Sydney	“	1	Allan McDonald..	69	Miner. Fall of roof stone. Rib and two arms broken.	
21	“	7,	Dominion	“	15	Thomas Guret.....	19	Bankman. Squeezed between two boxes. Left thigh lacerated.	
22	“	13,	Dominion	“	1	Stan. Tomisek.....	34	Loader. Fall of roof coal. Leg broken.	
23	“	13,	“	“	1	Trinca Caterina..	34	“ “ “ Leg broken and scalp cut.	
24	Apr.	15,	Sydney	“	1	James W. Briggs..	41	Miner. Fall of stone at the face. Back injured.	
25	“	22,	“	“	1	Alex. Stewart......	29	Miner. Fall of stone. Face cut and back injured.	
26	May	3,	Dominion	“	16	Frank Groves.....	36	Miner. Shot blew through on slant containing water, partly driven between main slope. Drowned.	1
27	“	3,	“	“	16	James Hamilton..	43	Miner. Shot blew through on slant containing water, partly driven between main slope. Drowned.	1
28	“	5,	Sydney	“	1	George Miller......	27	Miner. Fall of stone. Foot injured.	
29	“	19,	Dominion	“	1	Wm. Livingstone.	45	Miner. Piece of coal fell from face. Compound fracture of leg.	
30	“	19,	“	“	14	Stephen McKenzie	56	Miner. Struck by balance cage.	1
31	“	19,	McKay Mine....			Henry Farrel.....		Miner. Fall of stone from roof.	1
32	“	23,	Sydney	No.	2	Wm. A. Blanchard	23	Chainrunner. Struck by runaway box. Leg bk'n.	
33	“	23,	“	“	2	John Neal........	23	Loader. Struck by runaway box.	1
34	June	1,	“	“	1	John Heiddle.....	42	Miner. Fall of stone while putting up timber. Spine fractured.	
35	“	15.	“	“	3	Benjamin Enion...	45	Machine Runner. Fall of coal from face.	1
36	July	4,	Dominion	“	1	Neil R. McNeil....	45	Fall of stone from roof. Leg broken.	

Report of Accidents in Coal Mines of Nova Scotia (Cape Breton, Northern district) Year ended September 30th, 1911.

No.	Date 1911	Mine	Name	Age	Remarks	Fatal
37	July 8,	McKay Mine....	Edward Boutilier.		Crushed between box and side of roadway. Leg bruised.	
38	" 24,	Dominion No. 12	Antonio Ciambella	48	Loader. Fall of stone. One rib broken, leg injur'd.	
39	" 24,	" " 12	Dan Morrison......	21	Loader. Fall of stone. Collar bone broken and flesh wound on shoulder.	
40	" 25,	" " 1	J. A. McDonald....	16	Caught between two boxes. Collar bone broken.	
41	Aug. 2,	" " 1	Wasye Kohusz...	26	Driver. Caught between two boxes. Spine bk'n.	1
42	" 23,	" " 1	Cyril Gouthero....	44	Miner. Pulled piece of coal down on himself. Leg broken and ankle sprained.	
43	" 25,	McKay Mine....	Robert Keenan...		Fall of stone from roof. Back and legs bruised.	
44	Sept. 6,	Sydney No. 1	Matthew Doucett.	63	Miner. Fall of stone from face. Back and chest injured.	
45	" 6,	Dominion " 14	Alberto Cicchetto.	17	Loader. Fall of Stone.	1
46	" 6,	" " 14	Fredrico Machino	17	Loader. Fall of stone. Fracture of both legs and arms lacerated.	

Report of Accidents in Coal Mines of Nova Scotia (Cape Breton, Southern District) Year ended September 30th, 1911.

No.	Date 1910	Mine.	Name.	Age.	Remarks.	Fatal
1	Oct. 5	Dominion No. 3	Neil Campbell	25	Laborer. Struck by haulage rope. Leg broken.	
2	“ 8	“ “ 9	Archie Hallett	35	Miner. Fall of stone at face. Head injured.	
3	“ 20	“ “ 2	Frank Hickman..	35	Miner. Fall of coal, pillar. Leg broken.	
4	“ 21	“ “ 2	Edwd. Moore......	27	Miner. Fall of coal, face. Body bruised.	
5	“ 21	“ “ 9	George Boyce......	20	Driver. Caught between boxes. Leg broken.	
6	“ 21	“ “ 2	Alex. Chisholm ..	25	“ “ “ “ Head cut.	
7	“ 24	“ “ 5	Mick A. McMullin	35	Shot lighter. Struck by coal from shot. Leg brs'd.	
8	“ 24	“ “ 10	John M. Munroe .	30	Miner. Fall of stone. Hip bruised.	
9	“ 25	Gowrie	Dan McVicar	21	“ “ “ coal. Collar bone broken.	
10	“ 27	Dominion No. 4	Thos. Yacick	35	“ “ “ “ Head and back hurt. Accidental death.	1
11	“ 29	“ “ 2	Ken'h. McDonald	15	Landing tender, struck by box. Ankle fractured.	
12	Nov. 6	“ “ 10	Julian Caume......	36	Brusher. Fall of stone. Hand crushed.	
13	“ 8	“ “ 10	A. B. McDonald...	28	Miner. Fall of stone at face. Ankle bruised.	
14	“ 9	“ “ 9	Harry Head	35	“ “ “ “ Back injured.	
15	“ 14	“ “ 2	Allan McDonald .	17	Driver. Run over by empty box. Leg fractured.	
16	“ 18	“ “ 2	Thomas Voy.....	25	Miner. Fall of stone at face. Thigh fractured.	
17	“ 22	“ “ 9	Wm. Wilkinson...	18	Driver, Jammed between box and timber. Body bruised.	
18	“ 22	“ “ 2	John Campbell...	16	Landing tender. Run over by full trip. Arms and legs broken. Accidental death.	1
19	“ 24	“ “ 10	Andrew Housin...	35	Shooter & Loader. Fall of stone at face. A'kle hurt.	

Report of Accidents in Coal Mines of Nova Scotia (Cape Breton, Southern District) Year ended September 30th, 1911.—(Continued).

No.	Date 1910		Mine.	Name.	Age	Remarks.	Fatal
20	"	28	Dominion No. 5	Matthew Murphy.	20	Driver. Fall of stone. Foot crushed.	
21	Dec.	6	" " 8	Wm. Nearing....	60	Brattice man. Falling boom. Crushed foot.	
22	"	12	" " 8	Peter Gillis......	50	Miner. Caught between box and prop. Hip brs'd.	
23	"	15	" " 10	Thos. Berlier ...	40	" Fall of stone at face. Ribs broken.	
24	"	16	" " 9	Dan. R. Campbell	49	" Fall of stone. Compound fracture of leg.	
25	"	24	" " 2	Joseph Harris......	25	Driver. Run over by full box. Foot crushed.	
26	Jan.6, '11		" " 7	Wm. D. Burke...	18	Landing tender. Jammed between boxes. Injured internally.	
27	"	21	" " 4	Joseph McMullin.	35	Miner. Fall of coal in pillar. Slightly injured.	
28	"	25	" " 2	Gedore Arsenault.	17	Onsetter. Jammed between boxes. Arm broken.	
29	"	26	" " 4	James Marsh.......	19	Driver. Fall of rib-coal. Killed. Accidental death.	1
30	"	30	" " 7	James McNeil....	50	Shiftman. Fall of stone. Killed. Accidental death.	1
31	Feb.	10	" " 6	Ken'th McRitchie	67	Shooter & loader. Fall of coal. Arm cut.	
32	"	18	" " 2	Hadley P. Wier ...	22	Motor driver. Struck by prop. Skull fractured.	
33	"	21	" " 7	A. Almon	24	Miner. Fall of coal. Leg broken.	
34	"	28	" " 9	Eleazer Pettler....	25	" Fall of stone at face. Leg broken.	
35	"	28	" " 2	Ottin Marine	35	Shooter & loader. Fall of stone at face. Back inj'd.	
36	Mar.	5	" " 7	Christop'r Whittie	30	" " " " " Injured internally.	
37	"	15	" " 2	Thomas McPhee .	23	Driver. Jammed between box and roof. Died a few hours after. Accidental death.	1
38	"	17	" " 3	Thomas Lee.....	20	Helper. Fall of coal at face. Thigh fractured.	

39	"	17	"	"	4	Thomas Hawes ...	30	Miner. Fall of stone in pillar. Killed. Accidental death.	1
40	"	17	"	"	9	Dan McFadden ...	38	Carpenter. Struck by stone falling in man-shaft. Killed. Accidental death.	1
41	"	21	"	"	6	Lachlin McKinnon	21	Driver. Jammed between box and door. Hip inj'd.	
42	"	22	"	"	6	Gustor Geaconia..	19	Trip rider. Jammed between boxes. Ankle and knee bruised.	
43	"	23	"	"	6	James Wood.......	16	Driver. Jammed between box and rail. Sprained ankle.	
44	Apr.	3	"	"	6	Geolo Parlo.......	17	Driver. Jammed between box & trip. Pelvis inj'd.	
45	"	24	"	"	9	Hugh A. McDon'ld	23	Shooter & loader. Fall of coal. Foot and shoulder hurt.	
46	"	24	"	"	5	Wilson J. McIntyre	23	Miner. Fall of stone. Foot and leg crushed.	
47	"	29	"	"	5	M. A. McDonald.	55	" " " Leg broken.	
48	"	29	"	"	2	James Yates	35	" " " Arm inj'd, Ankle broken.	
49	May	3	"	"	4	Angus Morrison...	19	Helper. " coal. Leg broken.	
50	"	9	"	"	5	John D. McKinnon	46	Miner. " stone. Two ribs broken.	
51	"	12	"	"	8	Martin Campbell .	58	" " coal. Foot hurt.	
52	"	25	"	"	6	Chas. Boutlier....	60	Shiftman. Injured by axe. Hand cut.	
53	"	25	"	"	10	Simon Gallaut	55	" Fall of stone. Back and leg injured.	
54	June	6	"	"	6	Howard Murrant.	24	Miner. Fall of coal. Back injured.	
55	"	7	"	"	9	Wm. Wilkinson...	18	Driver. Caught between box and roof. Arm brk'n.	
56	"	10	"	"	6	Dan McLeod	18	" Runover by box. Toe crushed.	
57	"	12	"	"	2	Steph. Scolulasky	28	Miner. Fall of stone. Leg broken.	
58	"	14	"	"	5	James P. Cooke ..	30	" " coal. " "	
59	"	26	"	"	6	Henry Lyons	40	Shot firer. Struck by coal from shot. Leg brs'd.	
60	"	28	"	"	9	Martin Gillis.......	27	Laborer. Caught in picking belt. Foot injured.	

Report of Accidents in Coal Mines of Nova Scotia, (Cape Breton, Southern District) Year ended September 30th, 1911.—(Continued.)

No.	Date 1911.		Mine	Name	Age	Remarks	Fatal
61	July	6	Dominion No. 6	Neil Smith.......	17	Driver. Injured between shafts and prop. Hand and knee injured.	
62	"	8	" " 4	Hugh McDonald.	47	Miner. Fall of coal. Arm broken.	
63	"	19	" " 4	Dan H. McNeil ...	33	Machine runner. Jammed between machine and rib. Hand injured.	
64	"	19	" " 10	Joseph Hennessey	21	Boss driver. Fall of stone. Leg injured.	1
65	"	19	" " 10	Jules Aucett.....	29	Miner. " " " "	
66	"	20	" " 9	Stephen Joseph ...	30	Loader. Jammed between boxes. Foot bruised.	
67	"	20	" " 2	Lafin Subinski...	30	" Fall of stone. Jaw fractured.	
68	"	21	" " 4	John Ryan	42	Road maker. Fall of coal. Bruised arm.	
69	"	22	" " 2	Philim. Michaluk.	26	Miner. " " Ankle injured.	
70	Aug.	25	" " 2	Albert Keefe.......	21	Helper. Jammed between trip and door. Injured internally.	
71	"	25	" " 2	Hugh McNeil......	25	Miner. Fall of stone. Ankle and head injured.	
72	Sept.	9	" " 2	Mark Pekoff.......	24	Loader. Fall of coal. Leg broken.	
73	"	11	" " 2	Arthur Butts.......	24	Miner. Hurt by machine falling off table. Leg broken.	
74	"	11	" " 2	James Bishop....	30	Loader. Fall of stone. Arm cut.	
75	"	12	" " 2	James Bishop.....	21	Helper. Fall of coal. Abdomen, hip injured.	
76	"	13	" " 2	Wm. Hiscock......	25	Firemen. Flame from furnace. Face & hands b'rnt.	

PORT HAWKESBURY, N. S.

October, 16th, 1911.

HIRAM DONKIN, ESQ.,

Deputy Commissioner of Public Works & Mines,

Halifax, N. S.

DEAR SIR :—I beg leave to submit to you the annual report of the coal mines in the Inverness district for the year ended September 30th, 1911.

INVERNESS MINE.

Situate at Inverness, Inverness County.

Owned and operated by the Inverness Railway & Coal Company.

The principal buildings are bankhead of wood, 350 by 18 feet, with an ell 80 by 50 feet over the picking tables and car chutes: power-house of wood and cement, 70 by 75 feet: boiler-house of wood, 40 by 70 feet: forge and machine shop of wood, 22½ by 74½ feet: wash-house of wood, 25 by 60 feet, equipped with sinks, lockers, hot, and cold water. Carpenter-shop of wood, 18 by 28 feet: fan-engine house of brick, 18 by 47 feet: lamp house of wood, 16 by 34 feet: general office and store-room of wood, 32 by 55 feet: stable of wood, 20 by 60 feet: stable of wood, 26 by 60 feet: stable of wood, 30 by 60 feet: repair-shop of wood, 25 by 60 feet: store-room of wood, 20 by 30 feet: superintendent's residence 36 by 40 feet: manager's residence 32 by 34 feet: twelve single dwelling houses 20 by 26 feet, with kitchens 9 by 10 feet: eighty-seven dwelling houses 24 by 40 feet, with kitchens 9 by 10 feet: one single dwelling house 26 by 40 feet: one single dwelling house 24 by 40 feet: four single dwelling houses 18 by 26 feet: one single dwelling house 33 by 38 feet: one single dwelling house 30 by 40 feet: one single dwelling house 22 by 33 feet: one single dwelling house 16 by 24 feet.

The seam worked is known as the seven feet seam, and the coal averages approximately this thickness: the seam dips 15 degrees at the surface, and increases to 33 degrees at the bottom. The direction of dip is north 7 degrees east.

The haulage slope, is 4,900 feet long, and 10 feet wide, is in excellent condition : the slope dips from 15 degrees at the surface to 25 degrees at the bottom.

The mine is worked bord-and-pillar, pillars being drawn while advancing. The following is a report of the development work done during the year:—

No. 6 east level:—This level has been stopped. The coal from the inside balances is to be lowered through No. 6 balance which has been driven up from No. 7 level for this purpose.

No. 7 west level:—This level has been advanced 1,110 feet during the year, being now a total of 3,595 feet long. No. 2, 3, and 4 chutes have been driven, and the pillars drawn except a few hundred tons in No. 2 chute which will shortly be drawn. The sinking balance driven from No. 6, west level has been converted into a chute. No. 5 on No. 7 west, the bords have been driven and the pillars are now being drawn: No. 6 chute is being driven.

No, 7, east level:—This level was advanced 1,650 feet during the year, being now 4,700 feet long. The bords on this level are 14 feet wide with 34 feet of pillar between : the average cover over these pillars is 850 feet of solid strata. In No. 2, 3, 4, and 5 balances, the five upper places on each side of the balance, have been driven the usual distance of 300 feet; the upper pillars have been extracted in No. 2, 3, and 4 balances, and the lower bords in them are now being driven. No. 6 balance has been driven up to No. 6 high-level and the coal from the inside balances of No. 6, east level is being lowered to No. 7 level by means of this balance. No. 7 and 8 balances are being driven. Only No. 2 and part of No. 3 balance is undersea.

No. 8, west level:—This level was advanced 1,270 feet during the year, being now 1,650 feet long. No. 1 chute has been driven to No. 7 low-level: there are eight places on the west side and five on the east side; most of them have been driven the distance. The pillars will be drawn leaving 80 feet of pillar on each side of the chute, which will become the permanent return air-course for this section. No. 2 chute is now up, and has eight places on each side. Average cover over the pillars on this level is 1,100 feet solid strata, all undersea. The bords on this level are 12 feet wide with an average of 37 feet of pillar.

No. 8, east level:—This level was driven 1,680 feet during the year, being now 2,290 feet long. No. 1 chute, nine places on the east side and five places on the west side: most of the pillars have been drawn to within 80 feet of the chute which will be used as a return air-course for this section when the level is entirely exhausted. No. 2 chute has been driven through to No. 7 low-level, and has ten places on each side, the upper five on each side have been driven to the limit and now the pillars are being drawn, the lower places will be worked in the same way. No. 3 chute is now being driven and will have eleven places on each side. No. 4 chute is up 83 feet. All rooms on this level are driven 12 feet wide. A down-throw fault was met in this level, 150 feet past No. 4 chute, in the low-level: the coal has however been recovered beyond the fault. The average cover over the pillars on this level is 1,100 feet solid strata, all undersea.

The traveling slope, 9 feet wide, has been laid with 30 pounds rails to No. 7 level and is in good condition, other traveling ways are in good order.

The quantity of air in circulation is 110,000 cubic feet a minute, this quantity is produced by a Walker patent indestructible fan 7 by 18 feet, with a water gauge of 2.8 inches. The air is split once, at the lowest level. The length of the fan-drift is 36 feet, the sectional area being 140 square feet: the fan-shaft is 10 by 10 feet in area: the fan is connected to a 16 by 30 inch single engine by five 3 inch cotton ropes, geared 9 revolutions of engine to 12 of fan; the whole being enclosed in a brick house 18 by 47 feet. The stoppings are (1) cement: (2) bricks in cement: (3) booms laid in cement: (4) double boards with brattice cloth between: (5) brattice cloth. The mine is non-gaseous.

There are 625 Marsaut lead-plug safety lamps on hand, of this number 560 are in use, leaving 65 in reserve. No open lights are used.

There is an average of 432,000 gallons of water pumped from the mine in 24 hours. All water lines are cast iron, most of which are wood lined: all air-lines are wrought iron.

The mine is damp and free from dust, no sprinkling is done.

On June 15th, 1911, a gob-fire occured in No. 10 balance in No. 6 west bord on No. 6 east, which had previously fallen in. The whole west side of this balance has been walled in with cement stoppings and there has been no indication of heat or fire since. The general condition of this mine is good.

The number of men employed in each section is as follows:—

No. 6, east	36
No. 7, east	178
No. 7, west	66
No. 8, east	99
No. 8, west	86
Total	465

There are 100 men and boys employed on the surface.

Officers.

W. D. Barclay, general manager.
J. McGillivray, superintendent.
H. A. McLeod, manager.
Alex. Ross, mechanical superintendent.
John Cassidy, underground manager.
Neil P. McLellan, assistant underground manager.
S. J. Doucett, overman.
George Blackwood, overman.
James P. McNeil, night overman.
Amos Glabois, night examiner.
Samuel Price, night examiner.

The average thermometer reading in the return airway near the workings is 64 degrees Fahrenheit.

The steam generating plant consists of four 212 h. p. Babcock & Wilcox boilers, and two 250 h. p. Heine boilers, arranged in three batteries, all water-tube. These boilers are fed by one 1½ inch and one 2 inch Penberthy injectors for each battery: two 15 h. p. Matheson vertical boilers: one 35 h. p. Matheson vertical boiler in good condition but not in use, a total of 1,413 h. p.

The surface machinery consists of one Dixon double haulage engine 16½ by 30 inches, geared 3 to 1; diameter of drums 7 feet, 10 inches and width of face 3 feet, 6 inches; containing each 5,500 feet of 1⅛ inch plough steel ropes; speed 200 revolutions a minute, steam pressure 100 pounds to the square inch: one 100 h. p. haulage engine for traveling slope, 12 by 16 inches, geared 7 to 30, diameter of drum 4 feet, containing 4,000 feet of 1 inch plough-steel rope: one 20 h. p. Flory engine geared to single drum, used in yard to dispose of mine waste by lowering boxes to dump at shore: one 35 h. p. and one 15 h. p. Flory geared hoists, the former with tandem drums, not in use at present: one direct current dynamo and engine, 6 pole, 400 amperes, 125 volt dynamo connected to a 75 h p. Robb engine 12 by 12 inches, 280 revolutions a minute, capacity 900 standard 16 c. p. lamps: one, two-stage Ingersoll-Sergeant air compressor, cross compound steam and air, capacity 3,100 cubic feet of free air a minute; steam end 20 and 36 by 48 inches, air cylinders 19¼ by 32¼ by 48 inch stroke, corliss steam valve gear; air and steam pressure 100 pounds to the square inch: one Ingersoll-Sergeant compressor class A, size

12 by 18 inches, not in use: one Walker patent indestructible fan and engine, size of fan 18 by 7 feet, speed 100 revolutions a minute, water gauge 2.8 inches: single engine 16 by 30 inches, connected to fan by five 3 inch cotton ropes; ratio of fan and engine 12 by 9 revolutions: one Schiele fan 84 by 18 inches, two ports of entry each 27½ by 13 inches, discharge port 25 inches diameter, not in use at present: one Knowles compound pump at Big River, used to supply boilers at mine should the town water be shut off: one Blake pump 5 by 7 by 8 inches, used to circulate water through the jackets of compressor: one Northey pump, 10 by 4½ by 18 inches, used for cleaning boilers and for fire purposes: two Brown shaking-screens, feeders, tipples and picking-belts, run by two 8 by 8 inch Brown engines: one conveyor and one elevator for slack coal, driven by 1⅛ inch rope-drive by an 8 by 8 inch Brown engine: one double chain-creeper to elevate full boxes on bankhead, driven by 1⅛ inch rope-drive by a 10 by 10 inch Robb engine.

The main haulage rope is 1⅛ inch diameter, the traveling-slope rope is 1 inch diameter.

For fire protection a line of 4 inch pipe connected to the town main, runs through the yard, there is a hydrant at each end of the yard; a 2-inch pipe line laid in and around the bankhead with hose connections at different points; 95 pounds water pressure in pipe lines: 300 feet of rubber hose and 500 feet of cotton hose with reel ready for immediate use.

The underground machinery consists of one Jenckes hoist, 7 by 9 inches, single drum, used in sinking to No. 9 lift; driven by compressed air: one 18 and 30 by 12 by 20 inch compound Cameron, pot valve, wood-lined pump at No. 3 lift on back slope, capacity 500 gallons a minute, pumping to surface, vertical head 382 feet, driven by steam: one 30 by 9 by 36 inch duplex Jeansville steam pump, at No. 4 lift, on the back slope, capacity 700 gallons a minute; pumping to surface, vertical head 495 feet: one 20 by 9 by 20 inch Cameron pot valve, wood-lined pump at No. 5 lift on back slope, capacity 350 gallons a minute: pumping to either No. 4 or No. 3 pumps as desired, driven by compressed air: one 18 by 9 by 20 inch Cameron horizontal plunger-pump at No. 6 lift on back slope, capacity 330 gallons a minute, driven by compressed air: one 12 by 6 by 18 inch Cameron horizontal plunger-pump at No. 7 lift on back slope, capacity 150 gallons a minute, driven by compressed air: one 12 by 6 by 18 inch Cameron horizontal plunger pump at No. 7 lift on angle slope, capacity 150 gallons a minute, driven by compressed air: one 10 by 5 by 13 inch Cameron horizontal plunger-pump at No. 8 lift on angle slope, air-driven:

one 10 by 5 by 13 inch Cameron horizontal plunger-pump in angle-slope sinking, air driven.

Haulage ropes underground all ⅝ inch diameter.

The output for the year amounts to 291,587 tons, an increase of 14,330 tons over last year; the quantity of powder used being 73,306 pounds Acadia No. 3. A production of 3.98 tons for each pound of powder used.

Timber used in mine.

Props	985,242	lineal feet
Booms	364,300	" "
Sleepers	145,718	" "
Total	1,495,260	" "

Fifty-six ℔. steel rails are used on the haulage slope, 30 ℔. rails on the traveling slope and levels, and 18 ℔. rails on balances and in bords. There are 7,480 feet of track laid with 56 ℔. rails, 13,170 feet with 30 ℔. rails, and 82,060 feet with 18 ℔. rails.

MABOU MINE.

Situate at Mabou, Inverness County.

This property was owned by the Mabou and Gulf Coal Company, but was bought in during the year by the Eastern Trust Company of Halifax.

The mine has not been in operation since it became flooded on January 17th, 1909.

A trestle about 700 feet long built of native wood, connects the slope with the bank-house. The bank-house is of wood and is 227 by 27¼ feet with an ell 68 by 22½ feet. The other buildings consist of one boarding house 109 by 26¼ feet, 2½ storeys: one office 20½ by 12½ feet: one forge and work-shop 52½ by 25½ feet: one wash-house 25 by 20 feet: one boiler-house 27 by 37 feet with shed 16 by 42 feet: one boiler-house 21 by 38 feet with shed 16 by 42 feet: one boiler-house 25 by 50 feet with shed 16 by 42 feet: one engine-house 50 by 27 feet: one engine-house 27½ by 32½ feet: twelve double houses 1½ storey, 40 by 24 feet with kitchens 13 by 9 by 8 feet: one dwelling house 20½ by 15½ feet with ell 15½ by 12½ feet: one barn 24½ by 20½ feet.

The seam on which the slopes are driven is known as the seven feet seam. The workings are on the eight feet seam. The pitch varies from 40 degrees to 29 degrees dip for the first 700 feet of the slope, to 9 degrees dip for about 200 feet and then to a uniform dip of 21 degrees. The direction of dip is north 20 degrees west.

The slope, 10 feet wide, is 2300 feet long from the surface. The general pitch of seam is 21 degrees.

The method of working was bord-and-pillar ; no development work during the year. The traveling way is in good condition as far as can be seen. The method of haulage was by trips. The average quantity of water pumped in 24 hours, previously to the mine flooding was 63,000 gallons.

A slight fall has occurred in the air slope at the surface and same is securely fenced.

The steam generating plant consists of two Matheson boilers, 80 h. p. return tubular, 5 by 14 feet, externally fired : two Cooper boilers, 80 h. p. return tubular, 5 by 16 feet : three Mumford boilers, 100 h. p. each ; a total of 620 h. p.

The surface machinery consists of one duplex hoisting engine 20 by 32 inches with two drums, 5 feet in diameter, directly connected : one four-pole electric dynamo, marble switch board : one duplex air compressor with receiver, steam cylinders 20 by 30 inches, air cylinders 20 by 30 inches : one Sturtevant mine fan 77¼ inches diameter inlet, 60½ inches diameter, outlet 48½ by 48½ inches, directly connected to a 7 by 10½ inch engine ; the fan when running at 190 revolutions a minute produces a current of 20,000 cubic feet of air a minute with a water gauge of 1.3 inch : one screening plant, consisting of picking-table, screen, tipple, elevator, and engine.

The Underground Machinery consists of :—

Two Cameron horizontal plunger pumps, 12 by 7 by 13 inches, capacity 200 gallons a minute : two Cameron horizontal plunger pumps, 8 by 4 by 12 inches, capacity 65 gallons a minute: one fly-wheel pump : one duplex pump : two Ingersoll mining machines : one Harrison mining machine : two Radial mining machines.

PORT HOOD MINE.

Situate at Port Hood, Inverness County.

Owned and operated by the Port Hood-Richmond Railway & Coal Company, Limited.

The bankhead which is of wood is 105 by 33 feet: boiler-house 46 by 57 feet: power house 46 by 69 feet: blacksmith and carpenter shop, and lamp house 35 by 60 feet: storehouse 125 by 35 feet: storehouse 20 by 25 feet: wash-house 20 by 40 feet: scale-house 15 by 30 feet: office 25 by 35 feet: forty-three miners, cottages, single, 22 by 24 feet.

The thickness of seam is six feet, average pitch 22 degrees, direction of dip north 83 degrees west.

The slope is 3,070 feet long, and 10 feet wide, in fair condition, average pitch 22 degrees. The traveling slope is 8 feet wide.

The method of working is bord-and-pillar, pillars being drawn while advancing.

Details of development for the year:—

No. 4. north-level:—This level is now in a distance of 4,371 feet, it was not driven any during the year on account of the order issued by the Deputy Inspector. No. 7 balance was worked out and No. 8 just about worked out, there being less than three months work before abandoning.

No. 4, south level:—This level remains the same as last year, the bords being about worked out.

No. 5, north level:—This level was driven 1,600 feet during the year, No. 2 and No. 3 balances having been driven and No. 4 balance started: pillars have been removed a distance of 200 feet in No. 1 balance.

No. 5, south level:—The fault met in this level was pierced by the high level which was driven about 50 feet beyond the fault, the low level was just through the fault at time of flooding. The bords on No. 1 balance had been worked out and were in readiness to come back with the pillars.

The traveling ways are in fair condition. Direct haulage was used on the slope, eight cars of a capacity of 2,000 pounds each constituting a trip: horse haulage on the levels. The haulage ways are in good condition, the slope having been relaid with 40 pounds a yard steel rails.

There were 50,000 cubic feet of air a minute in circulation, this quantity being produced by one Dixon reversible 150 h. p. fan, 14 by 6 feet. The air splits at the bottom of slope, north and south, the north-side return to the fan is through a wooden box from the upcast on the surface having an area of 48 square feet, 150 feet in length; the fan drift is 150 feet long and has an area of 48 square feet: the fan shaft has an area of 64 square feet. 150 Ackroyd & Best magnetic lock safety lamps are used.

The average quantity of water pumped from the mine in 24 hours was 160,000 gallons: the air and water pipes are in good order.

The mine is free from dust but slightly gaseous, no sprinkling system was used.

A further addition of 25 new pit boxes have been made to the equipment during the year. A new Jeffrey disc conveyor has been installed for conveying slack and splint to the boilers.

The mine is now full of water.

There were four sections in the mine, the number of men in each section being as follows:—

No. 4, south	30
" north	48
" 5, south	30
" north	66
Total	174

The surface employees number 66.

The Officials are:—

R. J. Law, secretary-treasurer.

John Henderson, manager.

Edward Doyle, underground manager.

A. H. McEachern, overman.

Baptiste Arents, overman.

D. A. McIsaac, night examiner.

The steam generating plant consists of one battery Robb return tubular boilers 200 h. p, each: one battery Babcock and Wilcox 212 h. p. each, total 824 h. p.

The Surface Machinery consists of:—

One hoisting engine 20 by 40 inches, drums 7 feet in diameter: one Flory engine, 50 h. p.: one engine 35 h. p. to run picking belts: one tail-rope engine, 25 h. p.: one Flory tail-rope engine and dynamo, 60 k. w., 80 h. p.: 1,000 standard lights: one compressor air cylinders 22 and 36 inch, steam cylinders 32 and 36 by 36 inches, capacity 3,000 cubic feet a minute: one Sullivan compressor, two-stage compression, capacity 800 cubic feet a minute: one Rand compressor, capacity 500 cubic feet a minute: one Dixon reversible mine fan 14 by 6 feet: one Northey duplex pump, 10 by 5 by 12 inches. Haulage ropes are 1⅛ inch diameter. Fire protection apparatus consists of one underwriters' fire pump, 14 by 7 by 12 inches, duplex, capacity 500 gallons a minute, full speed 70 revolutions a minute: one hose reel with 1,000 feet of cotton hose, rubber lined.

The Underground Machinery consists of:—

One Cameron pump, 16 by 7 by 18 inches: two Northey pumps 12 by 5½ by 12 inches: one Cameron pump, 12 by 4 by 18 inches: one Cameron pump, 5 by 3½ by 7 inches. The underground haulage ropes are ⅝ inches in diameter.

The output for the year amounts to 41,192½ tons; the quantity of powder used being 8,556 ℔. of Monobel, and 19.631 fuses; being a production of 4.81 tons for each pound of powder used. The decrease in the output is accounted for by the fact that the mine was idle from December 24th, 1910 until April 15th, 1911, and from the 22d of June to the present. The first case being on account of labor trouble and the latter through the flooding of the mine on June 22d, 1911.

Timber used in Mine.

Props.............	29966	lineal feet.
Booms..............	33761	"
Sleepers............	23196	"

Forty pounds a yard rails are used on the haulage slope, 28 pounds a yard on traveling slope, 18 pounds a yard on levels and 12 pounds a yard in bords. There are 6,254 feet of track laid with 40 pound rails, 3,709 feet with 28 pound rails, 20,000 feet with 18 pound rails, and 16,192 feet with 12 pound rails.

RICHMOND SHAFT.

Situate at Port Malcolm, Richmond County.

This property is owned by the Canadian Consolidated Coal Company.

The mine has not been in operation since September 1st, 1908, on which date it was stopped as the faces were approaching old workings which were never definitely located.

The surface buildings are one power house 25 by 40 feet: one blacksmith and one carpenter shop, 10 by 30 feet: one office and supply house, 21 by 14 feet: five dwelling houses: one boarding house 30 by 70 feet: one dwelling and office for the manager.

The seam is known as the five feet seam and stands on an angle of 85 degrees. The direction of dip is north 67 degrees west.

The shaft is 200 feet deep on an angle 85 degrees, following the seam, and is 15 by 6 feet, divided into three compartments.

A B.F. Sturtevant fan, No. 5, capable of producing a current of 6,000 cubic feet of air a minute is on the ground for ventilating purpose. Up to the time of discontinuing operations, open lights were used.

While this mine was working the average quantity of water pumped in 24 hours was 129,600 gallons.

The steam generating plant consists of one Robb-Mumford boiler of 120 h. p., and two Matheson upright boilers of 25 h. p. each, a total of 170 h. p.

The surface machinery consists of one Allis-Chalmers hoisting engine 50 h. p., double tandem drums: one Flory hoisting engine 25 h. p., double tandem drums: one 4 h. p. fan engine: one B. F. Sturtevant fan, No. 5: one Sheldon fan 64 by 30 inches driven by a 4 h. p. engine: one No. 9 Cameron pump, capacity 150 gallons a minute.

The underground machinery consists of one No. 10 Cameron vertical plunger pump.

Twelve pounds a yard steel rails are used in the mine.

RICHMOND SLOPE.

Situtate at port Malcolm, Richmond County.

This property is owned by the Canadian Consolidated Coal Company.

The mine has not been in operation as a producer since January 1st, 1909, on which date the company decided to bend all efforts to locate the main bed of the coal where the seam is not so steep.

A wooden trestle 600 feet long built of hewn timber cut on the premises, spans Little River to a loading track near the old shaft; for a distance of 100 feet the trestle is 35 feet high. The surface buildings consist of power house, 18 by 30 feet: blacksmith shop, 10 by 12 feet: fan-house 5 by 10 feet.

The seam is known as the four feet seam, it parallels the five feet seam and is about 160 feet south of it. The direction of dip is north 85 degrees west.

The slope, 800 feet west of the shaft, is 288 feet in length and is 6 by 6 feet in size inside of the timbers; timbered through the surface with 8 by 10 inch sawed timber set four feet centeres, and lagged with 2-inch plank. The slope follows the vertical seam to the eastward and is on an angle of 22 degrees.

Ventilation is furnished by a Sheldon fan, capacity 1,800 cubic feet a minute; driven by a 4 h. p. steam engine. Up to the time of discontinuing operations open lights were used.

Very little water was met, a small Worthington pump being capable of handling all the mine water.

The steam generating plant consists of one Robb-Mumford boiler of 150 h. p. two upright boilers of 25 h. p. each: one upright boiler of 20 h. p. a total of 220 h. p.

The surface machinery consists of one Flory hoisting engine 8 by 12 inches, tandem drums, 30 h. p. two small Flory hoisting engines: one 4 h. p. fan engine: one Allis-Chalmers compressor and receiver: one Sheldon fan, capacity 1,800 cubic feet a minute.

The underground machinery consists of five sinking pumps: one small Worthington pump. Haulage rope ⅞ inch diameter.

498 feet of track is laid with 12 pounds a yard steel rails.

Yours respectfully,

W. F. Davis,

Deputy Inspector of Mines,

Inverness District.

Report of Accidents in Coal Mines of Nova Scotia (Inverness District) Year ended September 30th, 1911.

No.	Date 1910	Mine.	Name.	Age	Remarks.	Fatal
1	Oct. 6	Port Hood	William Griffins	30	Loader. Piece of coal fell off rib. Bruised foot.	
2	" 10	Inverness	Desire Renaut	39	Miner. Fall of coal. Back sprained.	
3	" 19	"	W. R. Flemming.	26	" " " Head cut.	
4	" 20	"	William Woods	25	" " " Head cut and back bruised.	
5	" 24	Port Hood	Allan McDonell	32	" Premature shot. Face and hands burnt.	
6	" 25	Inverness	William Clarke	41	Pumpman. Struck by empty box. Back and shoulder badly bruised.	
7	Nov. 2	"	James Taylor	25	Miner. Struck by prop. Head bruised.	
8	" 5	Port Hood	Dan P. McDonald	23	Cage runner. Fall roof coal. Arm broken above elbow.	
9	" 12	Inverness	Joseph McIntyre	25	Driver. Run over by wood wagon. Left leg, shoulder and head badly bruised.	
10	" 17	"	Fred Foust	35	Miner. Fall of rock and coal at face. Leg brk'n.	
11	Jan. 3, '11	"	Peter McDaniel	21	Driver. Caught between boxes. Foot slightly brs'd.	
12	" 24	"	Ranald McDonald	38	Miner. Fall of coal. Head crushed. Killed inst'ly.	1
13	Feb. 2	Port Hood	Edward O'Connor	33	Miner. Slipped at wash-house door. Sprained a'kle	
14	Apr. 4	Inverness	Robt. H. Cawley	18	Laborer. Struck by lump of coal. Hip and back injured.	
15	" 27	"	Lawson McKenzie	14	Trapper. Foot caught between door and rail. Foot bruised.	
16	May 22	"	Sylvan Lardriere	15	Driver. Foot caught between shaft and box. Foot bruised.	

Report of Accidents in Coal Mines of Nova Scotia (Inverness District) Year ended September 30th, 1911.—(Continued).

No.	Date 1911	Mine.	Name.	Age	Remarks.	Fatal
17	“ 29	“	James R. Campbell	27	Machinist. Cut by axe. Foot cut.	
18	“ 31	“	John R. McDonald	45	Laborer. Struck by falling board. Head cut.	
19	“ 31	“	James S. Doucett.	15	Laborer. Fell from riding rake. Leg bruised.	
20	July 8	“	Constant Dohet ...	49	Miner. Run over by box. Head cut, leg bruised and ribs broken.	
21	Aug. 14	“	Samuel Quigley...	30	Timberman. Fall of rock. Back and shoulder blade bruised.	
22	“ 14	“	Alex. Russell	35	Miner. Fall of rock. Right leg broken.	
23	Sept. 23	“	Dan. J. McIsaac..	32	“ Fall of coal. Spine injured.	
24	“ 26	“	Neil S. McNeil....	16	Driver. Run over by balance cage. Right leg broken and chest badly injured. Died 3 hours after accident.	1
25	“ 29	“	Andrew Cassidy...	32	Miner. Fall of rock. Foot bruised.	

PORT HAWKESBURY, N. S.
October, 16th, 1911.

HIRAM DONKIN, ESQ.,
Deputy Commissioner of Public Works and Mines,
Halifax, N. S.

DEAR SIR :—I beg leave to submit to you the annual report of the metal mines in the Inverness district for the year ended September 30th, 1911.

PLASTER MINE.

Situate two miles east of Eastern Harbor, Inverness County.

Owned and operated by the Great Northern Mining & Railway Company, Limited.

The principal buildings are, mill 210 by 40 feet, and 36 feet in height ; concrete floor : engine room 40 by 20 feet : forge 20 by 20 feet : five warehouses on wharf at Eastern Harbor, storing capacity 800 tons : a storage shed 160 by 75 feet is now being built 60 feet from the factory, storing capacity 4,000 tons.

No. 1 quarry situated 100 yards south-east of mill at an elevation of 100 feet, open quarry, 150 feet face. The product is conveyed to mill by a little tramway run by gravity ; cars holding one ton each empty into a pocket from which the crusher is fed. No. 2 quarry just being opened at foot of mountain on same level as mill and about 100 feet distant.

The gypsum after being crushed is elevated about 25 feet into a bin from which the roaster is fed ; from the roaster it is again elevated about 25 feet into a bin which feeds the grinding stones ; the stones are A 1. Burr stones, manufactured by C. O. Bartlett & Shaw Co., Cleveland, Ohio. From the stones the material is elevated about 35 feet into a bin which feeds the kettle, there it is calcined and thrown into a concrete vat where it is cooled, it is then thrown into bins where conveyors transfer it into a bin from which it is either mixed with hair and retarder to make the wall cement, or with retarder only to give the finishing product. On top of the calcining kettle there are collecting boxes which collect the vapor rising from the boiling gypsum in the process of calcination ; this material when set and cooled off is known as dental plaster.

A railway about three miles in length has been constructed within the last year. The company have purchased a standard locomotive for use on this road, and the Canadian Car & Foundry Company, Amherst, have now completed 30 cars of six tons capacity each. A shipping pier will be started as soon as material now on order is received, it will be completed by the spring of 1912. The large shed built at the factory is for storage to enable the company to manufacture after the close of navigation. The crusher is able for 300 tons in 24 hours, but the calcining plant can only turn out 50 to 60 tons a day; a new kettle is being placed which will double the capacity next year. The whole plant is lighted by electricity.

Officials.

Dr. P. J. L. Fiset, president.
Hubert Aucoin, managing director.
Paul Leclere, secretary.
J. Arthur Samson, superintending engineer.
Walter Chiasson, quarry foreman.

There are 22 employees in the factory and 16 in the quarry.

The steam generating plant consists of two Matheson horizontal boilers 75 h. p. each, a total of 150 h. p.

The following machinery is in addition to the mill machinery, one 125 k. w. dynamo, 240 volts, 277 revolutions a minute, 2 phase, 60 cycle, 178 amperes, Allis-Chalmers-Bullock make, belt drive, driving 5 motors; one 60 h. p., two 40 h. p., one 30 h. p., and one 5 h. p.: one 165 h. p. Robb engine.

25 teams are used hauling plaster to the wharf for shipment.

1,500 pounds of 40% dynamite was used during the year.

BARYTES MINES.

Situate at Scotsville and East Lake Ainslie, Inverness County, Cape Breton.

Owned and operated by Barytes, Limited.

The buildings consist of mill 115 by 52 feet and 28 feet in height: engine room 36 by 24 feet: power-house 50 by 30 feet: one storehouse: one blacksmith shop.

The properties leased cover an area of 700 acres. At Scotsville the mine is on the T. C. Campbell property, the vein is 6 to 13 feet wide, dipping south-east about 55 degrees. At East Lake Ainslie the mine is on the McMillan property, the vein here is 14 to 16 feet wide.

The tunnel on the Campbell property at the foot of the mountain is 400 feet to the vein and is well timbered. A slope has also been sunk on this property, of 90 long by 11 feet in width. The vein here is 9½ feet thick and is pitching about 25 degrees. A shaft has been sunk on the McMillan property a distance of 106 feet and the same is well timbered; the shaft has an elevation of 550 feet above the level of the lake.

During the past three months operations have been carried on at Scotsville, in the construction of a refining plant for the manufacture of ground barytes.

The district is well known for its deposits of sulphate of barium, many thousands of tons have been shipped in the crude state for treatment in the cities of Montreal and New York. The present plans are to manufacture at the mines instead of in the large cities, with the hope of reducing the cost of production. The plant now being installed consists of a well constructed building havin8 a floor area of 5,980 square feet. The southern end of this building contains the crushing and washing machinery, lead lined tanks in which the impurities are eliminated, the material is here also dried before being ground. The centre section of the building contains eight Burr mills set up in heavy wood husk frames, there are also a number of elevators and spiral conveyors for delivering the material to various points, in the course of manufacture.

The capacity of the plant is said to be one ton of the finished product an hour, which is more than enough to supply the whole consumption of the Canadian market at present.

The mine is now well developed, well timbered and yields the best quality of sulphate of barium so far discovered in this district. An analysis of the crude ore made by Messrs Ricketts & Bank, Chemists, of New York city in 1908, gave barium 98.25%. Barium being seldom, if ever, found pure, this is considered an exceptionally fine grade.

The promoters expect to be able to place their product on the market the first week in October and are looking for an increased business in the home market.

The mine is situate about half-a-mile north-east of the refining plant, on the apex of a mountain. It is proposed to transport the ore as mined by means of a back-balance skip to base of mountain into storage pocket, thence by gravitation to the factory. When the product is ready for market and packed into barrels, the material will be conveyed to the lake shore about 600 feet distant, by gravity tramway and loaded into the company's steamer which has a carrying capacity of 40 tons, the steamer will convey it to Strathlorne station on the Inverness Railway and Coal Company's railway, where it will be loaded into cars for shipment to Canadian or foreign markets.

The number of men employed daily at mine and mill is 20.

Officials.

S. M. Brookfield, president.

H. H. Harrison, manager.

Andrew McDonald, superintendent of plant.

Peter Campbell, superintendent of mine.

The steam generating plant consists of two brick-set boilers of 65 indicated h. p. each, a total of 130 h. p.

The machinery on surface in addition to mill machinery consists of one 100 h. p. Corliss engine: one hoist with 300 feet of ½ inch diameter rope: one back-balance gear with 1,200 feet of ¾ inch diameter rope: one Rand four drill compressor with two air receivers. Size of ropes used ¾ and ½ inch diameters.

Underground machinery.

Three Rand, No. 2, air drills: 2,000 feet of 3½ inch air-pipe.

There are 3,000 feet of track laid from the pocket to the mine with 12 pounds a yard steel rails.

MARBLE MOUNTAIN QUARRY.

Situate at West Bay, Inverness County.

Owned and operated by the Dominion Iron & Steel Company, Limited.

The buildings are, office 16 by 42 feet: warehouse 27 by 35 feet: carpenter shop 16 by 24 feet: machine shop 12 by 24 feet: engine room 24 by 52 feet: repair shop 20 by 30 feet: forge 30 by 40 feet: stable 35 by 40 feet: boiler house 80 by 30 feet.

The material quarried is marble and limestone.

The method of working is open face, the material is blown down from the face of the quarry with dynamite and loaded into three-ton cars by hand; these are then drawn out to the tipples by horses and dumped into a 3,000 ton crusher which crushes it into cubes about 6 inches in size, it is then conveyed from the crusher by means of a 30 inch belt conveyer to the screens and from there conveyed by the same means to the storage bins, then by means of hoppers and belts to the steamers hold.

Number of men employed 300.

Officials.

J. A. Campbell, resident manager.
J. H. McDougall, general foreman.
Kenneth Walsh, master mechanic.

The steam generating plant consists of 6 Robb-Mumford boilers of 800 h. p.

Machinery.

One Armington Sims engine 18 by 18½ inches, stroke 18 inches, 250 h. p. : one Matheson engine 12 by 12 inches, stroke 12 inches, 80 h. p.: one Robb engine 12 by 15 inches, stroke 15 inches, 100 h. p., side crank : one 85 h. p. generator : three 30 h. p. motors : two Rand compressors, capacity 2,000 cubic feet a minute: eight Sullivan drills : fourteen Little Job hammer drills : one Cameron pump, capacity 200 gallons a minute : one Northey pump, capacity 150 gallons a minute.

The fire fighting apparatus consists of two reels and 1,000 feet of 2½ inch standard hose, five 2½ inch hydrants.

The explosive used is dynamite, both 60% and 40% to the extent of five tons a month, about 1/10 of the quantity being 60% and the balance 40% ; batteries and fuse used in the discharge of shots.

Rails used are 60 pounds a yard, about 20 tons a season.

45 horses are employed.

Yours respectfully,

W. F. DAVIS,

Deputy Inspector of Mines.

WESTVILLE, PICTOU COUNTY, N. S.,
October 20th 1911.

TO HIRAM DONKIN, ESQ.,
Deputy Commissioner of Public Works and Mines and Inspector of Mines,
Hailfax, N. S.

DEAR SIR :—

I beg leave to submit to you the yearly report on coal mines, Pictou County, for year ended September 30th, 1911.

I regret to have to report 31 accidents during the year, seven of which proved fatal. Two of the fatal accidents occurred in the Drummond Calliery, two in the Albion Mines, one in the Acadia Mines, one in the Allen Shaft No. 1, and one in the Vale Colliery.

On October 17th, 1910, Angus R. McDonald, driver, was killed by falling in front of the full trip which he was driving at low level No. 8 lift, south side No. 2 slope, in Drummond main seam. He took three empty boxes down the slant, and near to the face of the levels where they were sided off. He then took the three full boxes and drove out towards the bottom of the slant. When near the slant he fell in front of the trip. He was found dead in the center of the track with the tram of the front car resting on his back.

The second fatal accident occurred on February 3d, on the surface at Albion Mines. A laborer, Willian Newcomb with another man was sent to unload a car of pit timber, while cutting the stakes which held the timber on the car, the timber suddenly fell on him, killing him instantly.

The third fatal accident occurred on March 16th, 1911, when Thomas Favier, driver, was driving in No. 11 level, south side, he was caught by the rake at No. 2 jig, and squeezed against the pillar. He died the same night.

The fourth fatal accident occurred in the Albion Mines. Huge McKenzie, a miner, was shooting coal after it had been mined by a machine: the fall was about five feet in thickness. While in the act of cleaning under the fall, the coal fell, crushing his head against the bottom. He was killed instantly. This accident occurred on April 20th, in No. 4 bord 2½ balance, north west side of cage pit seam.

The fifth fatal accident occurred August 25th, 1911 in the Drummond Colliery, No. 4 slope, Alexander Ross, a miner, was killed by being struck by runaway boxes.

The sixth fatal accident occurred on August 29th, 1911, in the Allen shaft. Arthur Moore, assistant bottomer at the 1200 feet bottom in the No. 1 Allen Shaft fell into the shaft with an empty car.

The seventh fatal accident occurred on September 2d, 1911, at the Vale Colliery. Hugh McKenzie, a miner, was coming up the slope on the trip which was struck by runaway cars from the down-going trip. He was killed instantly.

ALBION MINES, PICTOU COUNTY.

Owned and operated by the Acadia Coal Company, Limited.

The colliery buildings and bankhead have been kept in good condition, suitable to handle the output for the present, which has been greatly increased during the last year. A large amount of construction work is now being done which is to be finished early in the coming year. A new steel bankhead is building. All coal from the McGregor Slope will be screened at this plant, which will be run by electricity. Electric hoisting engines and fan for the McGregor seam are to be placed, and an electric driven fan for the slopes. A new wash-house of modern type, a lamp cabin, and a rescue station are being built. Six sets of saving apparatus will be kept and a corps of men will be trained in their use. The training station is at the Albion Mines. A modern ambulance has been bought by the employees with the assistance of the company, to be stationed at Albion Mines.

There is being built an electric sub-station 57 by 27 feet of terra-cotta blocks 18 by 9 inches, a wash-house 51 by 39 feet with officers room, 19 feet 6 inches by 11 feet and a room for a temporary hospital 19 feet 6 inches by 11 feet. This is also of terra cotta blocks. A lamp-house 39 by 13 feet, of terra cotta blocks. An engine house 40 feet, 8 inches by 41 feet at the slopes, and one of the same kind for the McGregor seam. A compressor house 63 by 43 feet and a new fan-house to the slopes. These two buildings are of wood.

This mine is operated by slopes, four seams being worked, namely the Ford seam, 27 feet thick, the Cage Pit seam, 15 feet thick, the Third seam, 11 feet thick, and the McGregor seam, 9 feet thick. The Ford seam and Cage Pit seam are operated by tunnels driven from one to the other, all coal being delivered at

No. 5 level in the Third seam, where it is hoisted to the Third seam slope which is 11 feet wide by 6½ feet high, 5000 feet long. The No. 5 level is down 2800 feet from the surface. The slope is in good condition, the pitch of these seams averaging 23 degrees. The method of working is bord-and-pillar. The rooms 12 feet, pillars 45 to 50 feet. Not much developing has been done during the year. In the Third Seam and in the Cage Pit Seam some balances have been opened for pillar work. A drift has been driven from No. 6 level on the north-west side of the Third Seam through the Cage Pit Seam and to the Ford Seam. It was driven 504 feet and stopped owing to a change in the angle of the Ford Seam. A shaft was put up about 30 feet at the face of the drift, and the Ford Seam found. A level was started west from the top of the shaft, and is now in 210 feet. The angle of the seam is about 9 degrees north-west. In the near future the course of the drift will be changed so as to get to the lowest point of the seam to drift for a haulage way. Another place was started due north from the top of this shaft to prove the angle, and it was found that the seam was perfectly flat, 90 feet from the level. There is no doubt that the basin of the Ford Seam has been reached in this part of the workings. The levels in the Ford Seam driven off the tunnel in No. 5 level have been advanced about 600 feet, and are in 1200 feet. The water in the old slant which was driven from No. 4 level during Mr. Poole's time, was tapped at No. 5 level and run off. A sinking and backslope are being put down in No. 5 level, and is now down 280 feet. The intention is to connect these sinkings with the levels from No. 6, when they will be used for balances. Air connections have been made around the slants driven by Mr. Poole. No. 5 levels are being driven so as to prove the field toward the north-west. All this work is in the Ford Seam, and promises a large area of coal.

In the Cage-pit seam no development work of any consequence has been done. The principal work is in pillars and one or two bords driving to keep the air in advance of the pillar work. There are three pillars being drawn on the north-west side of No. 1 balance off No. 4 level, one bord is being driven south-east to connect to the balance on the outside of the one now being worked, to form an air-way for further pillar work.

Five pillars are being drawn on No. 2½ balance off the Iron door level. Three pillars are being drawn on No. 2 balance off the same level. On No. 1 balance off No. 5 level, eight pillars are being drawn, and one bord is being driven south-east to connect to the flat balance for air. On the south-east side of Cage pit seam No. 1 balance off Iron door level three pillars, the level pillar, and the mine-bord pillar, are being worked. A permanent airway has been made on this lift which forms the connection to the main return on this side of the mine.

No development work has been done in the Third seam, No. 5 level. The only work now is pillar drawing and ribbing in along the high side of the old bords. This is the only way the pillars can be got at, as the bords which had been driven some time ago are all crushed. In the south-east side of the Third seam, No. 1 balance and back-head are being driven. There are six bords being ribbed in No. 2 balance.

On the north-west side of the Third seam all work has been stopped, owing to a crush in the air-way. A new air-way will be driven. When this is done the section will again be re-opened.

The traveling ways are in good condition. Direct haulage is used on the main slope. Nine boxes are hauled each trip. Horses are used for hauling on the level. Balances are operated by counter-balances. The haulage ways are in good condition.

There are 60,000 cubic feet of air a minute in circulation produced by a fan 19 by 5 feet, making 125 revolutions a minute against a water-guage of 2.8 inches.

The air is split at the bottom into each seam, and then is distributed into the sections by regulators. It is returned to the main return in the Third seam. The fan drift is 26 feet long, 17 feet wide and 13 feet high. The fan-shaft is 8 by 12 feet 9 inches. The fan-house 41 feet 6 inches by 19 feet 6 inches, is of brick, with wooden roof.

There are 380 Wolf safety-lamps in use.

The water in this colliery is pumped from the McGregor seam. It is conveyed from one seam to the other by a series of bore-holes, and to the McGregor seam from which it is pumped to the surface. The discharge is about 500,000 gallons a day. This pump is steam driven and is equipped with an 8 inch steam line, having a water line of 10 inches. The air pipes are 4 inches in diameter. This air line is so arranged that it can be converted into a water line in case of fire.

The mine is fairly damp and has no sprinkling system. A water-box is sometimes used on the south-east side of the Third seam. This is about the only place in which sprinkling is required. The dust in the mine being generally loaded out.

A new magazine of concrete has been built, having a capacity of 15 tons. The law has been complied with in its location.

The condition of this mine on surface, and underground is very satisfactory.

Employees.

Underground:	
The Ford pit section	20
North-west section, cage seam	59
South-east section, cage seam	16
Third seam, north-west section	9
" " south east section	21
Underground—Third seam:—	
Miners	177
Loaders	30
Shiftmen	136
Boys	16
Surface—Third seam:	
Mechanics	40
Laborers	115
Boys	13

Officers.

	John Higson, superintendent.
	Wm. Arthrell, manager.
(Slopes)—	Daniel Gillis, under manager.
"	S. Sutherland, overman.
"	Alex. Munro, "
(McGregor seam)—	Samuel Moss, under manager.
	John Dunbar, overman.
	Lewis Campbell, surface superintendent.
	David Reynolds, mechanical "

Barometric pressure and temperature.

	Barometer.		Thermometer.
Oct. '10	29.66	inches	54°
Nov.	29.72	"	48°
Dec.	29.46	"	50°
Jan. '11	29.39	"	49°
Feb.	29.65	"	38°
March	29.40	"	39°
April	29.88	"	41°
May	29.90	"	52°
June	29.20	"	54°
July	29.30	"	68°
Aug.	29.44	"	67°
Sept.	29.40	"	64°

Taken on south-east side of No. 5 level.

McGregor Seam.

This seam is worked by a slope independently of the others, and has been in operation during part of the year. It is now being stripped from top to bottom and timbered, to provide room for an electric cable to run down the east side of the slope to the pump room. Much construction work is now being done in this slope. A new pump-room 57 by 12 feet, 11 feet high, has been made. The roof is supported by steel girders 25 lb. to the foot. These have been placed 12 inch centers, filled with concrete. A new well is being sunk for the pump, and a drift is to be driven to connect it with the old well. Electric pumps with a capacity of 500 gallons a minute are to be placed. This work will be finished and the pumps operating early in November.

Roads were put into No 2 and No. 3 levels, and balances and pillars started on the north-west side of the slope, but work has been discontinued for a short time. No. 4 level was opened and track laid in the level as far as No. 4 balance, and bords were relaid with tracks nearly to No. 5 balance. Eight pillars were started back, four of which have been drawn, and crossed to No. 3 balance. All the others will cross as they come out. No. 5 levels west have been driven about 450 feet, and are still going. No. 3 balance has been driven to No. 4 level, and six bords are in operation on it. No. 4 balance and back-head are being driven up. The conditions of this slope are very satisfactory.

Surface Machinery.

Six Stirling boilers, single 200 h. p. each.

One double Stirling boiler, 300 h. p.

One hoisting engine, 16 by 42 inches, geared 3½ to one, drum 9 feet, at McGregor slope.

One hoisting engine, 16 by 30 inches, geared 2½ to 1, drum 9 feet, at Third seam slope.

One engine, 8 by 12 inches, double geared, 5 to 1.

One screen engine, 10 by 18 inches.

One engine, 12 by 15 inches: (machine shops)

One engine, 8 by 10 inches: (tail rope, McGregor Slope)

One electric engine, 14 by 14 inches, 2200 volts.

One feed pump, Cameron, 8 by 8 by 5 inches.

One Fire pump, Cameron, 12 by 12 by 15 inches.

500 feet of Hose.

One Babcock fire extinguisher.

Water for fire purposes is supplied by a 3 inch line of pipes connected with town supply. There are about 700,000 gallons kept in reservoir.

One Compressor, steam, 16 by 26 inches, air 16¼ by 26½ by 18 inches.

One Walker fan, 19 by 5 feet.

One Fan engine, 15 by 26 by 36 inches. (Third seam)

One Black-Hawthorne fan, 10 by 5 feet.

One Fan-engine, 24 by 24 inches, directly connected. (McGregor Slope)

Third Seam, hoisting rope, one inch.

McGregor Seam, hoisting rope, 1¼ inch.

Underground Machinery :

One engine, Third Seam sinking.

One double engine, 12 by 12, geared 19 to 78, drum 6 feet.

One engine 8¼ by 16 inches, geared 11 to 74, drum 4 feet (Ford Seam sinking)

One engine, 6 by 8 inches, geared 20 to 95, drum 2 feet. (No· 4 level, Third Seam)

These engines are driven by compressed air.

One Duplex Northey pump, 4½ by 2½ by 4 inches, 800 gallons an hour (Third Seam sinking)

One Jeansville pump, 6 by 4, by 12 inches, 3000 gallons an hour, (Cage Pit sinking)

These pumps are air-driven.

Haulage ropes, Third Seam sinking and Ford Seam sinking are ¾ inch. Balance ropes are ½ inch.

Explosives :

23,077 ℔ Monobel : 7,500 ℔ Saxonite, and 52,682 detonators were used. 197,752 tons of coal were produced from McGregor and Third Seams.

Timber used Underground:

Props	307,792	lineal feet.
Booms	442,708	"
Sleepers	58,061	"

Rails in Mine:

45,823	feet,	18 lb
17,570	"	12 "
12,820	"	30 "

I visited this colliery 32 times during the year.

VALE COLLIERY.

Owned and operated by the Acadia Coal Company, Limited.

The bankhead is arranged for direct haulage. The trip, of six boxes, lands direct. The screens are nearly in line with the slope. One screen is used, having a picking table of about 30 by 4 feet, driven by engine. The other screen is used for loading box cars. The empties are carried by grab-chains to and over brow of the slope. The engine house, 42 by 40 feet is of brick. The boiler-house is of corrugated iron. The fan-house and compressor-house and all the other colliery buildings are of wood. This mine is in the Greener seam, which is not uniform in thickness. The average throughout the whole field is 3 feet 9 inches. The pitch varies from 3 to 23 degrees. The true dip is north 28 degrees 30 minutes west.

This mine is operated by a slope 10 feet wide by 6 feet high, inside of timber, and 2400 feet long.

The pitch of the slope varies from 26 degrees near the top to 9 degrees at the bottom. About 400 feet in the west level, an angle-deep runs down 2800 feet, pitching from 3½ to 4 degrees. These slopes are in good condition.

The system of work is longwall and bord-and-pillar. Very little developing was done during the year. A back slope which was sinking off No. 8 level to No. 9 has been discontinued on account of water. The pump is efficient, but the pipe is to small. The company is waiting a shipment of larger pipes when operations will begin. The sinking was driven 300 feet. No. 8 level, west, was driven about 200 feet. No. 7 level, west 200 feet. A new balance is driving and is up about 250 feet. A balance was driven from No. 8 level east to No. 7. No. 1 balance north was driven about 100 feet for prospecting purposes. Two levels were driven from this balance west, and connected to No. 1 slant off No. 5 level north-east. This makes a shorter course for the air and assists the ventilation. A large field of coal has been opened in this section, and considerable repairs done to the air-way.

There are three sections operating: namely, north-side, east-side angle-deep, and west-angle-deep. Bord-and-pillar work is being done in the first two, the last is worked longwall.

In the north side of No. 1 balance there are seven pillars being drawn, and one bord working. Two pillars are being drawn in No. 6 level, east of the angle deep, and two pillars and three bords are operating in No. 2 slant. In No. 7 level, east of angle deep there are three bords working, and in No. 7 level, west of angle deep, four pillars are being drawn on No. 3 balance. No. 4 balance which was worked longwall has been finished, and the walls carried over to No. 5 balnce, ten of which are now being operated. This balance takes all the coal from between No. 7 and No. 4 levels. No. 6 balance is driving, and is up 250 feet. There are 8 walls operating in No. 8 level, west of angle deep.

The traveling ways are in good condition, but low in some places, due to the irregularity in the height of the seam.

Direct haulage is used on the slope, the levels are operated by horses, and the counter system on balances.

There are 35,500 cubic feet of air a minute circulating, produced by a Walker fan 28 feet in diameter, directly connected to a Walker engine 20 by 24 inches—w. g. 3 inches. The air is distributed from the main bottom, a portion being directed into the north section. The remainder is carried to the lowest part of the angle-deep workings on the east side, and along the faces to the return on No. 4 level. The fan-drift is 16 feet long, area 126 feet. The air-shaft is 8 by 8 feet.

There are 201 Ackroyd & Best safety lamps in use.

From 65,000 to 70,000 gallons of water are pumped daily, from the 1800 feet lift. All the other pumps act as feeders to the dams at this lift. The pump at the 1800 feet lift has a four inch steam line and an 8 inch steam water line. The pumps below the 1800 feet lift are air-driven. The air-line from the surface to the 1800 feet lift is 5 inches. From this to the west side engine, the line is 3 inches. A 3-inch line runs to the pump on the east side, and a 2 inch line to the north-side engine. A 2 inch line runs down the angle deep on the west side to the pumps in that section. This mine is damp and is very free from gas. Its general conditions are very satisfactory.

Employed underground.

North section	14
East section of angle deep	20
West “ “ “	64

Officers.

H. E. Coll, superintendent.

R. H. Gray, manager.

H. H. Cameron, under manager.

J. H. McNeil, overman.

Neil McKay, overman.

J. D. McKay, night examiner.

Geo. Fraser, surface foreman.

F. M. Carmichael, Mechanical Foreman.

Miners	88
Loaders	27
Shiftman	36
Boys	36

Surface :—

Skilled Laborers	10
Laborers	52
Boys	2

		Barometer		Thermometer
Oct.	’10	29.73	inches	53 degrees
Nov.	“	30.40	“	40 “
Dec.	“	29.74	“	41 “
Jan.	’11	30.35	“	38 “
Feb.	“	29.90	“	39 “
Mar.	“	30.20	“	41 “
Apr.	“	30	“	44 “
May	“	29.70	“	48 “
June	“	29.60	“	58 “
July	“	30		60 “
Aug.	“	29.50	“	62 “
Sept.	“	30.20	“	54 “

Readings taken at main return, No. 4 level.

Surface machinery.

Three Stirling boilers, 200 h. p. each.

One return tubular, 50 h. p.

One hoisting engine, 16 by 39, geared 2½ to 1, drum 8 feet.

One engine 8 by 12 inches, (single).

One engine 8 by 12 inches, (single), at screening plant.

One compressor, 17½ by 24 by 20 inches.

One compressor, 17 by 42 by 18½ inches.

One Walker fan 28 feet, directly connected to Walker engine, 20 by 24 inches, producing 25,000 cubic feet of air at 60 revolutions a minute, w. g. 3 inches.

One duplex Cameron pump, 4 by 8 by 12 inches, at reservoir.

One duplex Cameron feed pump, 4 by 8 by 12 inches.

One Dynamo, 125 volts, for lighting plant.

350 feet of 2½ wire-wound hose.

One Jeansville pump, 8 by 5 by 12 inches, supplying water to the plant, from reservoir.

Underground machinery.

One Lidgerwood engine, 10 by 12 inches, geared 5¾ to 1, rope ⅝ inch.

One Sturtevant engine, 7 by 12 inches, geared 4 to 1, drum 3 feet, 3 inches—bottom of No. 1 balance, north side.

One Cameron pump, 4 by 8 by 12 inches, at No. 8 level.

One Cameron pump, 5 by 12 by 12 inches, No. 7 level.

One pump, 5 by 12 by 12 inches, east side, 2,400 feet level.

One compound Knowles pump, 12 by 24 by 8 inches, l. p. 20 lb., h. p. 70 lb., 16,500 gallons an hour, at 1800 feet level.

This pump discharges all the water in the mine, at the surface. It is steam-driven.

There were 16,377½ lb. Monobel powder, and 34,109 detonators used during the year.

The output was 87,972 tons.

This colliery is worked longwall. About 8 feet of the top part of the seam being taken. The walls are 37 feet from lowside to lowside. The roadways are 6 feet wide and 9 feet high. They are protected by wooden chocks 5 by 5 feet, boomed 2½ feet centers and lagged. The walls are driven in from the jig 150 or 200 feet, where they are met by other walls driven in the opposite direction. The jigs are from 300 to 400 feet apart.

No development work of any consequence has been done in this colliery during the year. A sinking was put down from No. 12 level, about 1000 feet south of the Main Slope. It was driven about 400 feet across the angle of the seam. About 25 degrees toward the south. Four places have been started off this sinking going south.

Slope pillars 50 feet thick are being left. An air-way is being maintained around the top places out to the return. Inside of this 50 feet pillar longwall will be started. No work has been done on the north side of this sinking. The coal is hoisted on to No. 12 level south.

On No. 1 jig in No. 11 level, south, walls are working.
" 2 " " " " " "
" 2½ " " " " " "
" 3½ " " " " " "

The level pillar is being driven inside of No. 3½ jig.

There are 33 men employed in this section.

In No. 12 level south, No. 5½ jig is being driven, and is up about 60 feet.

No. 6½ jig is up 70 feet.

There are five walls working on No. 7 jig.

The level pillar is being drawn inside of No. 7, No. 8 and No. 9 have been worked out up to a fault which runs through the center of this lift.

All the jigs operating run into the same fault.

No. 4 jig is being repaired, and brushed over this fault to the coal above to No. 11 level.

Four places are being worked in No. 13 lift-sinking.

There are 35 men employed in this section.

In No. 12 level, north side, there are three chutes working.

Timber used in mine.

Pit props, small end,	4½	inches	55,470	lineal	feet.
" " " "	4	"	316,000	"	"
Booms	6½	"	49,695	"	"
"	6	"	390	"	"
Sleepers	4	inch face	39,270	"	"
Total			460,825	"	"

Rails in mine.

52,780 feet	32 ℔.
59,280 "	18 ℔.
23,750 "	12 ℔.

I visited this colliery 14 times during the year.

ACADIA MINE.

Owned and operated by the Acadia Coal Company. There have been no extensions or alterations on the surface during the year. The bankhead is of wood covered with corrugated iron. It is semi-circular. The full trip landing on the bank, runs by gravitation around a curve to the tipple: the empties are carried from the tipple up a short incline by a socket-chain, from the grab-chain, then they gravitate to a station near the brow of the main slope.

The cleaning plant is composed of one large picking table and shaker screens for separating the coal into lump coal, egg coal, nut coal, and culm. The culm is conveyed from the screen to the boiler house. This plant is driven by a steam engine. An engine house 42 by 40 feet, of brick, boiler shed covered with corrugated iron. One lamp-house and offices combined. Blacksmith, machine shops, and carpenters' shop all of wood. One office building and store-house, of wood. The fan and compressor houses are brick on concrete foundations, with wooden roof.

This mine is in the Acadia Main Seam, average thickness 15 feet, angle of dip 26 degrees. The true dip of the seam, north, 49 degrees and 49 minutes east.

The slope is on the true dip and is about 5000 feet long, width 10 feet, height 6½ feet.

No. 1 chute has two walls in operation.
No. 2 " " " " " "
No. 3 " " " " " "

There are 18 men employed in this section.

The traveling slope is being repaired. It will be completed to No. 8 lift, by the end of this month. The track will be continued and repaired all the way down. These repairs are being done by means of an engine placed on the surface.

From No. 8 down to No. 10 the traveling way is very rough. There are some broken timbers and other materials that have been washed down by overflows of water. By the end of this year it will be all in good condition and a track laid to the bottom.

Direct haulage is used on the slopes. Horse haulage is used on the level. The jigs are self-acting. The haulage ways are in good condition.

There are 26,250 cubic feet of air a minute in circulation, produced by a Capell fan 13 feet 6 inches by four feet, w.g. 5 inches. The fan is rope-driven by a 100 h. p. engine. Fan-drift 30 feet long by 13 feet diameter. Fan-shaft is 13 feet in diameter and 64 feet deep. The fan-house is 22 by 14 feet, of brick and covered with wood; and is 16 feet from the fan-shaft. The air is taken down from the main-intake to the bottom where it is split, a portion going to the north side and the remainder to the south side, thence to the main return which is on the south side of the mine.

The north side air is led in through the return above the No 11 level by an overcast.

The Wolf safety lamp, self lighter, is used.

The average quantity of water pumped daily is about 275,000 gallons. The No. 6 lift pump is equipped with a 6 inch water pipe line and a 4 inch steam line. No. 10 pump has a 3 inch and a 4 inch water line. No. 12 pump a 3 inch water line. No. 13 pump has a 2 inch water line. These pumps below No. 6 are air-driven. The air is supplied by a 4 inch line to No. 10 level, below No. 10 there is a 3 inch line.

This mine is fairly dry and dusty. The main levels are sprinkled about twice a week, and oftener if needed. The sprinkling is done by a box with sprayer attached. A great deal of dust on the main level is stone dust, caused by the brushing of the levels.

This mine with others has been badly handicapped during the year through a scarcity of loaders.

The mine is in fair condition. There are three sections operating :—

No. 11 south level	33 miners
No. 12 " " and sinking	35 "
No. 12 level, north side	18 "

Officers.

John K. Blenkinsop, superintendent.

James Brown, manager.

George Burton, underground manager.

Archibald Black, overman.

James Ross, surface foreman.

Wm. Sutherland, mechanical foreman.

Barometric Pressure and Temperature.

	BAROMETER	THERMOMETER
Oct/10	31.70 inches	70 degrees.
Nov/10	31.64 "	71 "
Dec/10	31.80 "	72 "
Jan/11	31.70 "	72 "
Feb/11	32.00 "	68 "
Mar/11	31.90 "	69 "
Apr/11	31.70 "	68 "
May/11	31.60 "	69 "
June/11	32.00 "	68 "
July/11	31.70 "	72 "
Aug/11	31.70 "	73 "
Sept/11	32.00 "	70 "

The temperatures were taken in the return at No. 11 level, south side.

Surface Machinery.

Five B. & W. Boilers, 150 h. p.

One boiler, 150 h. p.

One double first motion engine, 32 by 60 inches, drum 10 feet, rope 1⅛ inch.

One engine, 12 by 12 inches, drum 4 feet 8 inches, rope ¾ inch at top of traveling slope.

One engine, 8 by 8 inches, in machine shop.

One engine, 12 by 24 inches, at screens.

One engine, 7 by 11 inches, drum 2 feet, for hoisting timber.

One Fan engine, 9 by 16 inches, 100 h. p.

Two compressors, 20 by 24 inches, air, 30 by 36 inches, steam.

One compressor, 16 by 34 inches.

One Northey pump, 6 by 6 by 3 inches in compressor house Capacity 9000 gallons an hour.

One feed and fire pump, Knowles No. 7, 10 by 12 by 6 inches.

Water for fire protection is taken from the Town main, 4500,000 gallons are kept in the reservoir at the colliery for emergencies.

Underground Machinery :

One Jenckes engine, 7 by 10 inches, geared 7 to 1, air driven, at No. 12 level, south, sinking.

One pump, No. 6 Knowles, 14 by 22 by 24 by 5½ inches, discharge pipe, 6 inches. This pump discharges all water of the mine at the surface.

One pump, 6 by 7 by 6 inches, north side No. 6.

One pump, 8 by 14 by 16 by 4 inches, air-driven, at No. 10 level, discharge pipes, 4 inches.

One pump, 2 by 13 by 4 inches, air-driven. discharge pipe 3 inches.

One Cameron pump, 6 by 6 by 3 inches, air-driven, discharge pipe 1¼ inches.

The last four pumps discharge to the first mentioned, at No. 6.

All haulage rope used on jigs and for sinking purposes are ½ inch. No explosives are used.

The output was 86,420 tons.

Employees :

Miners	115
Loaders	13
Shiftmen	46
Boys	40

Surface :

Skilled Laborers	13
Laborers	55
Boys	5

Timber used in Mine:

Pit props, booms and sleepers......1,064,393 lineal feet.

Rails in Mine:

5,400 feet, 32 lb. 9,380 feet, 28 lb.; 2800 feet, 24 lb.; 1500 feet, 22 lb.; 30,250 feet, 18 lb. 4,250 feet of 2½ by ⅝ iron.

I visited this colliery 14 times during the year.

ALLAN SHAFTS, STELLARTON.

Owned and operated by the Acadia Coal Company, Ltd.,

The wooden buildings at this colliery have nearly all been replaced by brick buildings. The steel bankhead at No. 1 shaft is now used for all coal raised in No. 1 and No. 2 shafts. It is equipped with one set of bar screens and revolving tipples, scales and picking belt. Another set of the same is ready for use and two more are being erected. Knocking-screens for the slack coal to the railway yard have been added, and a 150 ton scale for railway cars. Excavating is nearly finished for the sidings at the new bankhead. A brick house 55 by 67 by 47 feet high, with concrete foundations is being built for an electric power plant, which will supply this mine and the Albion mine with power for all purposes. A boiler-house 125 by 78 feet 45 feet post, of brick, with concrete foundation, is being erected. It will contain 12 B. & W. boilers, 458 h. p. each. The boilers will be fired by chain-grate stokers. The building will be fitted with coal conveyors and coal bins. A brick stack 160 feet high, 18 feet diameter at the ground, 11 feet at the top has just been finished. It rests on a concrete foundation 12 feet thick. Two workshops 90 by 35 feet, of terra-cotta tiles, 9 by 18 inches. One building will be used for a carpenters' shop, the other for a machine and blacksmiths' shop. A two storey office, 40 by 25 feet, of brick has been built. It is heated by steam, and has the latest modern improvements.

This colliery is in the Ford seam. On the north side of the basin, which is now being mined, the thickness runs from 37 to 45 feet. The pitch varies from 30 to 50 degrees. True dip north 63 degrees, 30 minutes west. This colliery is worked by two shafts, known as No 1 and No. 2, each 32 by 11 feet inside of timber. Each shaft has three compartments—two hoistsng compartments and one air compartment. These shafts are about 350 feet apart. No. 1 is 1440 feet deep to the Cage seam and No. 2 is 962 feet to the same seam. They are timbered with sets of yellow pine, 12 inches square and lagged behind with two-inch yellow pine planks, from surface to bottom. Both these shafts are in perfect condition.

The mine is worked bord-and-pillar. Bords 12 to 14 feet wide and from 8 to 9 feet high, pillars 50 feet.

The coal is handled by means of chutes and counter-balances. These are driven on the angle and bords are turned on each side and driven level 400 feet to the next balance or chute. Two bords are driven the thickness of the seam. When the bord is broken off it is in the top part of the seam next the roof. When in about 50 feet a place is driven on the high side against the pitch until it strikes the pavement, where a bord is turned and is driven in the bottom part of the seam and nearly under the next bord above, the one from which it was turned off. There are about 25 to 30 feet of coal between the two bords. This forms a roof for the lower bord and a bottom for the upper bord and so on all over the mine. By this method a larger percentage of the coal is secured in the first working, than would be gotten by driving single bords.

In the drawing of pillars the top pillar is drawn out first a little in advance of the bottom pillar, and when a fall takes place in the bottom pillar a very large quantity of the coal which is between the two is easily gotten. In some cases 500 tons have been taken from one fall. This system so far has proved successful.

There has not been much development work done during the year. A large amount of permanent construction work has been done. Tunnels have been driven from No. 2 to No. 1 shaft to the rock. No. 1 tunnel was driven about 100 feet from the bottom in an easterly direction. This tunnel is semi-circular in form, and has a two per cent grade toward No. 1 shaft. The boxes will run by gravity from No. 2 to No. 1 The tnnnel is 370 feet long, 8 by 10 feet. Both sides are concreted one foot thick: 60 lb. steel rails, 1 foot centers, protect the roof. These rails are reinforced between with concrete one foot thick. No. 2 tunnel was started off the No. 1 shaft opposite to No. 1 tunnel and driven in a westerly direction. It came out at the same point where No 1 tunnel started from. The length of this tunnel is also 370 feet, 8 by 7 feet. Its walls and top are secured in the same way as No. 1. It will be used as an empty roadway having two per cent grade against the empties from No. 1 shaft to the junction at No. 2. This junction will be the distributing point for all coal coming from No. 2. A creeper chain is to be used and the engine is now in place for it. This will transfer the empties from No. 1 to No. 2 shaft. An engine house 10 by 7 by 10 feet has been made with concrete walls and roof and iron beams. A new underground pump-house, 16 by 35 by 10 feet high, with concrete walls, off No. 2 tunnel and connects to the third department of the shaft. This outlet to be used for the discharge pipe. The engine room roof is supported by 1-beams, 10 inches wide, one foot centers and concreted between, which makes a very safe top. On the east side of the pump house inlet there is a shaft six feet in diameter and 27 feet deep, walled with concrete. This shaft is to be used for the suction pipe. From the bottom of this shaft a place 8 by 10 feet was driven 250 feet long. It is concreted, walls and top and is connected to another shaft 6 feet in diameter, 18 feet deep, sunk off No. 1 tunnel. This tunnel and shaft is a lodgment and inlet to the pump.

Turbine electric pumps are being placed to discharge against a head of 975 feet. These pumps will handle the water from the Ford pit, which is to be tapped in the north-west level in No. 2 shaft. The tappings will be by bore-hole at the extreme end of the Ford pit workings. The company purpose to have this work all in operation about the end of November next.

Another tunnel No. 3, 8 by 10 feet driven off No. 2 shaft 500 feet from the bottom, in a northerly direction, across the measures through rock 650 feet, cutting the Ford seam. The object of this tunnel is to save uphill haulage and transfer of the coal which comes from No. 51 and No. 33 chutes and takes all the coal from the rise workings. Two levels have been started off this tunnel east and west and are each in now 100 feet. These levels will go into the highest workings now operated in No. 51 and No. 33 chutes. As soon as connections are made all coal will be brought from these levels and tunnels to No. 2 shaft. This tunnel when being driven was ventilated by a 3 feet fan driven by air, connected to a 20 inch galvanized pipe to the working face, with very good results. This tunnel 8 by 10 feet was driven 275 feet each month by two eight hour shifts.

Another tunnel, No. 4, was driven from the Cage seam north west level in No. 2 shaft to tap the Third Seam at a distance of 250 feet. The seam was found to be fairly good but lying at a very high angle. It is the intention in the very near future to put this tunnel through to the Ford Seam. The traveling road 6 by 6 feet, was made around the No. 2 shaft on the north-west side to the south-east side. It is concreted, sides and top and prevents crossing the shaft bottom. In No 1 shaft, 200 feet from the bottom, places were driven in the Ford Seam east and west on the north side of the basin around the skirt of the south basin. They connected at a distance of 1000 feet. A rise-head 8 by 8 feet was started and driven 250 feet at the 1200 feet bottom, 300 feet east, to connect the 962 feet level on the north basin. A sinking was driven 150 feet off the south-east level in the Ford Seam to connect to the 1200 feet rise which is being driven up. These are nearly connected. A balance was driven 300 feet inside of No. 51 chute on the south-east side. The transfer balance was advanced on the north-west side of Ford Seam about 250 feet and double bords turned east and west. This is about all the development and construction work that has been done during the last year. In north-west side of No. 33 chute, seven pillars are being worked east and west. In the transfer balance and back-head there are five double bords operating. In No. 51 chute, south east side, on transfer balance, five double bords and four pillars are being worked. In No. 2 balance, south-east, four bords are being operated on each side. All work is in the Ford seam, nothing is being done in the Cage seam. The traveling ways and haulage roads are in good order. Horse haulage is used on the level, and the balance are worked by the counter-balance system. There are 48,000 cubic feet of air a minute in circulation. This is produced by a Guibal fan, and distributed from the bottom of the main down-cast in two splits, one to the north-west side, and the other to the south-east side. The air is conducted around the faces of the workings on each side to the main return. The fan-drift is 45 feet long, area 60 feet. The fan-shaft is 10 by 6 feet. The Wolf safety lamp, self lighter is used. All the water from this mine is taken out by tanks: there is a daily discharge of 10,500 gallons. The main air-pipe is four inches and the branch three inches. The mine is damp and does not require sprinkling.

There are 58 miners in the north-west section, and 84 in the south-east section.

Officers:

Harry E. Coll, superintendent.

Simon Lott, manager.

Neil McLean, under manager.

Roderick Campbell, overman.

Thos. Scully, night overman.

Everett Park, mechanical superintendent.

Lauchlin McNeil, surface foreman.

Barometric Pressure and Temperature.

		Barometer		Thermometer	
Oct.	'10	29.40	Inches	62	Degrees
Nov.	"	29.78	"	54	"
Dec.	"	29.36	"	38	"
Jan.	'11	28.93	"	36	"
Feb.	"	29.59	"	34	"
Mar.	"	28.97	"	35	"
Apr.	"	29.13	"	42	"
May	"	29.93	"	54	"
June	"	29.71	"	58	"
July	"	29.63	"	63	"
Aug.	"	29.50	"	66	"
Sept.	"	29.45	"	56	"

Temperature taken in main return.

Surface Machinery:

One double Stirling boiler, 316 h. p.

Two double Stirling boilers, 200 h. p. each.

Twelve B. & W. boilers, being set. 450 h. p. each.

When the B. & W. boilers go into commission the Stirling boilers will be taken out.

Two hoisting engines, 20 by 30 inches, drums 5 by 7 feet 6 inches, one at No. 1 shaft, and the other at No. 2.

One vertical engine, 8 by 10 inches, hauling coal from No. 2 to No. 1 bank.

One hydraulic hoist, hoisting coal from the bottom of bankhead at No. 1 shaft to the first floor.

One Walker engine, 20 by 20 inches at screens.

One engine 8 by 10 inches, fan-draft for boilers.

One Guibal fan, 26 by 8 feet, 48,000 cubic feet of air a minute w. g. 3½ inches.

One Fan engine, (Robb Armstrong) 13 by 24 inches.

Two Sergeant compressors. One 18 by 18¼ inches, and one 18 by 26¼ inches, 1600 cubic feet of air a minute.

One Niles 4 feet radial drill—Blacksmiths' shop.

One lathe and bolt-and-nut threading machine.

One pump, 12 by 6 by 13 inches, and 350 feet of 2½ inch rubber hose, with hose reel for fire protection.

Underground Machinery :

One engine, 6 by 8 inches, drum 20 inches, south-east sinking. Hoisting ropes, 1 inch, balance ropes ¾.

There were 20,626 lb. of Monobel powder and 335,87 detonators used in getting coal. 9682 lb. Samsonite and 13,564 detonators used in construction.

Employees :

Miners	76
Loaders	46
Shiftmen	68
Boys	18
Construction men	50
Total	258

Surface :

Skilled laborers	13
Laborers	80
Boys	5
Construction men	112
Total	210

Timber used in Mine:

Pit props, 5 inches small end	47,760	lineal feet.
Poles, 4 inches small end	9,334	"
Booms 6 " "	50,867	"
" 7 " "	24,564	"
" 7 " "	5,104	"
Sleepers	7,747	"
Total	145,376	

Rails in Mine:

8,780 feet	18 lb.
95,000 "	12 "

I visited this colliery 33 times during the year.

DRUMMOND COLLIERY.

Owned and Operated by the Intercolonial Coal Company, Limited.

There have been no improvements around the surface at this mine during last year. The general repair work was kept up. The bankhead is of wood, and is 250 feet long by 60 feet, with an annex attached for the screening plant and other machinery. It is eqiupped with three tipples, one handles the coal from the main seam one handles the coal from No. 6, No. 7 and No. 8 lifts in No. 2 slope, and the other handles the coal from No. 4 slope. The coal from No. 4 comes on to the bankhead from the south side, and coal from No. 1 and No. 2 slopes approaches the north end to the bank-head in a semi-circular curve to the tipples, by gravitation. The empties from the tipple are carried up grade by a grab-chain. These tipples and creeper-chains are run by steam. Each tipple is run by an independent engine. There is a box-car loader and coal conveyor, the latter for carrying culm. These are steam driven.

The blacksmiths' shop, machine shop, stables, locomotive-shed and saw-mill are of wood: the lamp-house of brick. There is a washing-plant to wash slack for coke, capacity about 175 to 200 tons a day. The hoisting-engine house 45 by 42 feet, is of brick. The foundation of another engine-house has been laid near the other. This house will be occupied by a large engine for use in the No, 2 slope. The one now in use will be removed: it has served 44 years. The boiler-house is of brick covered with corrugated iron. The fan and compressor-houses are of pressed brick. In the brick factory, all the departments are of brick. A one-storey office-building with foundations of concrete and superstructure of wood, has recently been built. It is steam heated and fitted with all modern improvements.

The seam worked is the Acadia Main. It is about 16 feet thick and pitches 17 degrees on the main slope. In some of the workings the pitch increases to 20 degrees. The mine is operated by three slopes, No. 1 from which all the coal from the main seam is taken. No. 2 is the riding slope and is used for taking the coal from No. 6 level and No. 8 level, and the output from the Clay seam. No. 4 slope takes the coal from No. 4 mine. No. 1 and No. 2 slopes are 10 feet in width inside the timber, and is now 8,000 feet long. No. 4 slope is 10 feet wide inside of timber, and is about 2,000 feet from the surface to the main bottom. A level runs toward the south about 1000 feet, where another slope is driven which has reached about 3,000 feet or about 5000 feet from the surface to the face of the back deep. The coal at the face of the main deep is good, and has an even pitch about 17 degrees. The coal is not so good at the face of the back deep in No. 4 slope, and is not so thick. It pitches here about 14 degrees.

The main seam is worked longwall. No. 6 and No. 8 levels and No. 4 slope are worked bord-and-pillar. In the main-seam deeps, the development work has been kept up during the year. The No. 19 levels have been started north and south. The south levels have been driven 400 feet, and the north level 60 feet. Lodgments have been driven in the solid coal; stables are being erected, and preparations made to start the air-way to connect to No. 18 level. No. 18 south level has been driven 700 feet and is still advancing. It is now in 2600 feet. No. 3 and No. 4 balances have been driven up to No. 17 levels. No. 18 and No. 17 lifts are 240 feet apart. No. 5 balance is being driven and is up 220 feet. No. 6 balance is also driving and is up 60 feet. No. 18, north side, the levels have been driven into the boundary between the Acadia Coal Company and the Intercolonial Coal Company. These levels are 1500 feet. No. 1, No. 2, and No. 3 jigs have been started toward No. 17 lift. No. 1 jig when up 140 feet, No. 2 jig, when up 90 feet, and No. 3 jig at 130 feet, met the same fault, an upthrow from 35 to 40 feet between No. 18 and No. 17 lifts. An air-way is being driven from No. 1 jig along the fault to the other jig. An effort is being made to get over the fault, between No. 1 balance and air-way which was driven down from No. 17 to No. 18, so as to get the coal that is above the fault up to No. 17 level. There is no doubt that this is the same fault that is in the Acadia colliery, between No. 11 and No. 12 levels.

On No. 1 jig, north side of No. 17 lift, two walls 40 feet long are being operated. An air-way balance is being driven up. No. 2 jig has six walls 40 feet long, operating. Six walls are being worked in No. 3 jig. On the south side of No. 17 lift in No. 2 jig, four walls are working.

No. 3 jig, five walls operating..
No. 4 " " " "
No. 5 " four " "
No. 6 " " " "

These walls are 40 feet long.

In No. 8 lift, the work being done is in the bottom part of the seam. This coal was left during the first working, all of which was bord-and-pillar. After the bords were worked, pillars were drawn to a height of 10 or 11 feet. The upper part of the seam came to the floor. A pair of levels has been started through the crushed workings, about 500 feet from the main slope on the south side. The old crush now forms the roof of these levels. They have been driven very successfully 2400 feet, and 5½ to 6 feet high. These levels now tap the workings and are within 500 feet of No. 4 slope. This new work will be of much value to this colliery, as it is opening up a large area of coal that was lost. Similar levels are being driven on the north side. Balances have been driven up in the bottom coal in No. 8 to No. 7, and connected to the sinking which was driven down from No. 6 lift to No. 7 lift, and which forms an air-way, greatly assisting the ventilation. No. 1 balance was driven 420 feet, up to No. 7 lift and six bords are being operated on it—three on the south side and three on the north side. No. 2 balance has been driven up 420 feet to No. 7 lift, and has three bords operating on each side. No. 3 balance and back-head are being driven and they are up 250 feet. No. 4 balance and back-head are being driven and are up 240 feet. No. 5 balance and back-head are driving and are up 140 feet, and No. 6 balance has been started.

The north-side levels are now in about 500 feet, and are still advancing. The sinking in No. 6 lift, driven down through the old crush from No. 6 level to No. 7 level, has been completed and two bords driven off the north side, in the bottom coal. They are in about 250 feet. The pillar is being drawn successfully. A balance and back-head in the bottom coal have been started off the south side, and are up about 60 feet. No. 1 balance, in No. 6 level, is being driven in the bottom coal, and is up 250 feet. No. 2 balance has two bords and one pillar working. No. 3 balance and back-head is being driven and is up about 50 feet. A slant was driven about 300 feet south of sinking, toward No. 7 level, through the old crush, about 350 feet: two bords going north and one pillar south are being worked. No. 4 slope and traveling way have been driven from No. 11 to No. 12, about 400 feet. No. 11 levels have been driven northward, during the year, about 600 feet in the bottom coal, and have been for about 400 feet under the old crush. The balance and back-head have been driven up toward No. 10 level. No. 1 balance was driven 450 feet in the top part of the seam to No. 10 level, and is now ready for working. No. 10 levels are being driven in the bottom coal in a northerly direction toward No. 2 slope. They are now in about 700 feet and are still advancing. No. 3 balance and back-head are driving up in the bottom coal, and have advanced 100 feet. No. 2 balance is working in the top part of the seam. Three pillars are being worked in this balance. In No. 1 balance two pillars are being worked in the top part of the seam. No. 9 levels are being driven north in the bottom of the seam. These are double shifted. They have advanced about 600 feet during the year, and are still going. Three bords are being operated on No. 1 balance, ribbing in. No. 2 balance and back-head are being driven up in the bottom coal. They have advanced 60 feet.

The clay seam, under the Third seam, is working at intervals to suit the requirements of the brick works, and clay sales.

The condition of the traveling way is good. Direct haulage is used in these slopes, horses are used in the levels. The jigs are self-acting. There are 50,000 cubic feet of air a minute in circulation. In No. 4 slope there are 28,000 cubic feet of air a minute in circulation. The ventilation is produced by a Walker indestructible fan, 20 feet 6 inches diameter, 215 revolutions a minute, against a w. g. 6.5 inches. This fan is connected to a Walker engine, by six 1-3/4 inch ropes. The ventilation is ascensional. The air is taken down the main intake to the bottom, and split. It is then conducted along the faces, and enters into the main return at the top of the workings. The north air is overcasted into the return above the top sections of the workings. No. 4 slope is ventilated in the same manner, the air passes through the workings of No. 8, No. 7, and No. 6 lifts, and then to the return. The fan-drift is divided into two compartments 20 by 3 feet 9 inches each.

The fan-shaft is 12 by 10 feet, 325 feet deep.

630 Marsaut safety lamps are used.

Employees :

Miners	278
Loaders	64
Shiftmen	160
Boys	104
Total	606

Surface :

Skilled Labor	92
Laborers	115
Boys	26
Total	233

The output was 261,607 tons of coal and 3,728 tons of clay.

Officers :

James Floyd, superintendent.
Malcolm Blue, manager.
Donald McNeil, under manager.
Thomas Gray, Jr., under manager.
Robert Lachlan, overman.
George Wright, “
James Henderson “
Alex. R. Stewart “
James McNeil, “
Norman McLeod, “
Roderick Johnston, “
Wm. Gray, Jr. “
Thos. Stewart, examiner.
Jas. Smith, examiner.
Thos. Floyd, surface foreman.
James Saunders, mechanical superintendent.

The mine is fairly damp on the haulage roads: it is somewhat dusty at the working places—no sprinkling is done. Work has been very steady during the year, but the management was badly handicapped by a scarcity of loaders.

Barometric pressure and Temperature.

	Barometer		Thermometer	
Oct. '10	29.54	Inches	71	Degrees
Nov. "	29.28	"	71	"
Dec. "	29.50	"	69	"
Jan. '11	29.12	"	68	"
Feb. "	29.60	"	66	"
Mar. "	29.95	"	66	"
Apr. "	29.82	"	65	"
May "	29.14	"	66	"
June "	29.18	"	68	"
July "	29.40	"	70	"
Aug. "	29.60	"	64	"
Sept. "	29.54	"	62	"

Surface Machinery:

Five water-tube boilers, 1000 h. p.

One boiler, 200 h. p., main slope.

Five boilers, 900 h. p., compressor plant.

Three boilers at Scott pit, 180 h. p.

One hoisting engine, 28 by 60 inches, drum, 2 feet, 9 inches, rope 1⅛ inch, No. 1 slope.

One hoisting engine, 16 by 36 inches, geared 2½ to 1, drum, 8 feet, rope, 1⅛ inch, No. 2 slope.

One engine, 16 and 24 by 26 inches, geared 4 to 1, drum 8 feet, rope 1⅛ inches, at No. 4 slope.

One engine, 8 by 12 inches, at No. 2 screen.

One engine, 8 by 12 inches, at No. 3 screen.

One engine, 8 by 12 inches, driving conveyors, loading box-cars.

One engine, 10 by 15 inches, bankhead.

One engine, 12 by 24 inches, culm conveyor.

One engine, double, 7 by 10 inches, geared 5 to 1, drum 3 feet, at fan-shaft.

One engine, 8 by 10 inches—machine shop.

One engine, 14 by 24 inches—brick-plant.

Two engines, each 8 by 12 inches—washplant.

Two locomotives.

One Walker compressor, 2 by 2½ by 39 by 22 by 35 inches, fan-shaft.

One Jencke's compressor, 18 by 30 inches, at fan-shaft.

One Walker fan, 20 feet 6 inches rope-driven, running 215 revolutions a minute, w. g., 6.5 inches.

All the colliery buildings are supplied with patent fire-extinguishers. There are four hydrants directly connected with the town water supply, 450 feet of fire-hose.

Underground Machinery.

One engine, 7 by 10 inches, drum 3 feet—traveling slope, No. 18 lift.

One sinking-engine, 10 by 12 inches, geared 3 to 1, 2½ feet drum.

One pair Jencke's engine, 12 by 15 inches, 2 friction drums, 3 feet 6 inches, ¾ inch rope—No. 4 slope.

These engines are air-driven. The ropes on the self-acting planes are ½ inch.

One Cameron pump, 7 by 10 by 3½ inches, air-driven No. 19 lift.

One Northey pump, 10 by 12 by 4 inches, air driven, No. 18 lift.

One Northey pnmp, 14 by 12 by 5 inches, air driven, No. 17 lift.

One Knowles pump, 14 by 18 by 4 inches, air-driven, No. 14 lift.

One Duplex Northey, 11 by 5 by 18 inches, 5 inch pipe, air driven, No. 9 lift.

One pump, 8 by 14 inches, steam-driven, No. 5 lift.

This pump discharges all the water to the surface against a head of 325 feet.

One pump 10 by 18 by 4 inches—No. 6 lift in No. 4 slope.

This pump discharges to No. 5 lift.

There were 10,000 lb. Monobel powder and 18,882 detonators used during the year.

Timber used in mine.

Props	4 inches small end,	2,578,444	lineal feet
Booms	6 " " "	661,847	" "
Total		3,240,291	" "

Rails in mine.

32,650	feet of 32 lb.
410,240	" " 18 "
10,300	" " 2½ by ⅝ iron.

I visited this colliery 33 times during the year.

THOMAS BLACKWOOD,

Deputy Inspector of Mines.

Report of Accidents in Coal Mines of Nova Scotia (Pictou District) Year ended September 30th, 1911.

No.	Date 1910	Mine.	Name.	Age	Remarks.	Fatal
1	Oct. 10	Albion..........	Leonard Almon..	32	Miner. Fall of top coal. Right leg fractured.	
2	" 10	Vale Colliery ...	Alex. McInnis	35	Examiner. Fall of top coal. Ribs parted from back.	
3	" 15	" " ...	Angus McNeil, jr.	16	Driver. Caught between roof and box. Wrist bone broken.	
4	" 17	Drummond......	A. R. McDonald .	17	Driver. Fell in front of full trip. Killed inst'ly.	1
5	" 27	Allan Shafts....	Wm. McCulloch...	30	Laborer. Fell into chute on bank-head. Slightly injured about the body.	
6	" 28	" " ...	F. McKenzie	30	Engine tender. Caught by crank of engine against bed plate. Feet slightly injured.	
7	Nov. 8	Albion..	Fred. Bouderacu...	32	Miner. Fall of coal. Three ribs fractured.	
8	" 23	Drummond....	John W. Fraser ..	24	Blacksmith. Struck by a small piece of steel. Lost sight of one eye.	
9	Dec. 6	"	John Dobson	23	Loader. Struck by brake-handle. Two ribs brk'n.	
	1911					
10	Jan. 22	Allan Shaft No.2	Thos. Lewis	27	Miner. Fall of coal at his working face. Leg brk'n.	
11	" 23	" " "	Rod. Campbell...	38	Overman. Riding down balance on cage. Arm broken.	
12	Feb. 3	Albion.........	Wm. Newcomb ...	27	Laborer. Fall of timber. Instantly killed.	1
13	Mar. 11	Allan Shaft No.2	Albert Williams...	20	Driver. Caught by cage while crossing over bottom. Arm slightly injured.	
14	" 16	Drummond......	D. McKenzie	23	Loader. Struck by empty box. Leg broken below knee.	

15	"	16	Acadia..........	Thos. Favier.....	21	Driver. Caught between rib and full box. Fatally injured. Died on the 17th at 12.30 a. m.	1
16	Apr.	20	Albion..........	H. M. McKenzie .	29	Miner. Fall of coal at face. Instantly killed.	1
17	"	20	Allan Shaft No.2	John McKay	24	Loader. Fall of coal at face. Head badly cut and foot injured. Foot had to be amputated.	
18	"	29	" " "	T. McMillan.......	40	Shiftman. Fall of coal. Face and legs bruised.	
19	May	13	Drummond.	B. McDougall ...	15	Brake holder. Running a timber wagon on the surface. Leg broken near the ankle.	
20	May	15.	Vale Colliery....	Joseph Delorey....	18	Landing tender. Coupling up cars. Arm broken at wrist.	
21	June	8.	Albion Mines..	Wm. H. Crompton	31	Shiftman. Assisting to put ballast box on the track on balance.	
22	July	24.	" ...	Anthony Brown...	45	Landing tender temporarily. Fall of coal. Scalp wound and broken rib.	
23	"	26.	McGregor Seam	Don. Van Larken.	38	Miner. Fall of coal. Leg broken.	
			Drummond....	George Hughes...	22	Loader. Balance brake. Wrist injured.	
24	Aug.	9.	"	Hector Dupre.....	16	Pump boy. Runaway boxes. Head & body inj.	
25	"	17.	"	Alexander Ross..	55	Miner. Struck by rake. Fatally injured. Died same night.	
26	"	25.	Allan Shaft......	Arthur Moore.....	18	Helper at shaft bottom. Fell down shaft with full box from No. 12 to 14 landing. Killed instantly.	1
27	"	29.				Accidental death.	1

Report of Accidents in Coal Mines of Nova Scotia (Pictou District) Year ended September 30th, 1911.—(Continued).

No.	Date 1911		Mine.	Name.	Age	Remarks.	Fatal
28	Sept.	2.	Vale Colliery....	Hugh McKenzie..	55	Miner. Riding on empty trip up slope. Killed. Accidental death.	1
29	"	2.	" "	FredCarmachael..	53	Mechanical Superintendent. Scalp wound and otherwise injured.	
30	"	19.	Drummond Col.	Andrew McNeil...	15	At screens. Caught by the screen picking table. Foot badly injured.	
31	"	26.	Albion Mines...	Hugh Munro.....	32	A runaway trip from bank. Rib broken and small bones of his foot broken.	

Springhill, N. S.,
October 1st, 1911.

Hiram Donkin, Esq.,
Deputy Commissioner of Public Works and Mines,
Halifax, N. S.

Sir:—I have the honor to submit to you the yearly report on the coal mines in Cumberland County.

Minudie Mine, River Hebert.

This mine is owned and operated by the Minudie Coal Company Limited.

It is worked by a slope 10 feet wide 5½ feet high and 2300 feet long, in first class condition.

The bank-head and other colliery buildings are of wood, with the exception of the powder magazine, which is of brick.

This seam is known as the Minudie seam. It is three feet thick, with a clay parting in the center, varying from 3 to 12 inches. The seam lies at an angle of 19 degrees, and dips to the south-west.

The mine is worked on the longwall system, and the coal is hauled to the slope by horses and putters.

There are 30,000 cubic feet of air a minute in circulation, produced by a 7-feet Stine fan, which is belt-driven. The fan-drift is 7 by 7 feet and in good condition.

The water from the mine is discharged by a steam pump, the daily output being 144,000 gallons.

The mine is damp in most of places, and is well ventilated, very little gas is found.

The workings are divided into six sections:—

There are 24 men in Section 1.
" " 14 " " " 2.
" " 10 " " " 3.
" " 16 " " " 4.
" " 16 " " " 5.
" " 12 " " " 6.
—
92

Officials.

Harry McCarther, manager.

Alexander Stewart, under manager.

John S. Barton, day overman.

Richard Howarth, examiner.

Gorden Clarke, night overman.

The slopes have not been driven since last report, but sinking is likely to commence soon.

The levels going east have been driven, and working places are being turned off.

The 1200 feet, east level is in 2563 feet from the slope.
" 1600 " " " 1686 " " "
" 1900 " " " 1062 " " "
" 2200 " " " 720 " " "

The west levels were not driven last year.

Open lights are used throughout the mine.

No important changes have taken place on the surface, but everything is being done to facilitate the handling of the output.

During the year, 2300 ℔. of dynamite and 130 kegs of powder were used. The output was 54,481 tons.

Surface machinery.

One Stine fan, 7 feet diameter.

One pair hoisting engines, 12 by 15 inches, geared 4½ to 1. 75 h. p.; drum 5 feet.

One double hoist, 7 by 10 inches, drum 2 feet.

One fan engine 10 by 12 inches, 25 h. p.

One single engine, 12 by 30 inches, running saw-mill.

One center-crank engine, 8 by 10 inches, cleaning plant.

Three locomotive boilers.

Two vertical boilers, 48 inches by 7 feet.

Two Leonard boilers, 60 h. p. each.

Four return tubular-boilers, 54 inches by 14 feet, total h.p. 350.

Underground Machinery.

One pump, 18 by 7 by 24 by 24 inches, capacity 18.000 gallons an hour.

One pump, 6 by 10 by 12 inches.

One pump, 5¼ by 3½ by 6 inches.

One Blake pump, at the 2,200 feet level.

Timber used in Mine.

Pit-props, 8,952 lineal feet

Booms and butts, 323,696 lineal feet.

Sleepers, 2,488 lineal feet.

Rails in Mine.

5,000 feet of 18 lb., 28,000 feet of 12 lb., the latter size used in levels and gate-ways.

SPRINGHILL NO. 2.

Operated by the Dominion Coal Company.

The bankhead is of wood. The entire structure being housed in with corrugated iron on wooden frame. It is equipped with two end-tipples, three revolving tipples, three shaker screens, picking belt, conveyor, and rotary screen.

The hoisting-engine house, rotary house, and pocket-building are of corrugated iron on wooden frame. The lamp-house and power-house are of cement and brick.

NO. 2 WEST SEAM.

This seam is 8 feet, 4 inches thick, and pitches from 20 to 80 degrees. The main slope is 4200 feet long, 10 feet wide and 7 feet high. The pipe-way is 8 feet by 7 feet, the full length of the slope. The fan-way is 10 by 8 feet 4 inches.

The mine is worked bord-and-pillar. The levels in operation are the 2800 feet, 3300 feet, and the 4000 feet.

The coal is hoisted in rakes of 12 boxes each. The main slope ropes are 1¼ inch, and the sinking-rope is ¾ inch. The haulage on the levels throughout is done by horses, there being 34 employed.

There are 130,000 cubic feet of air a minute in circulation w. g. 6.5 inches, with 170 fan revolutions a minute. There are five air-splits in the mine, two at the 3300 feet level, two at 4000 feet level, and one at the 3300 east tunnel.

The west level has been driven 2800 feet.

The condition of the mine, due to the late suspension of work by the employees completely disarranged the ventilating system. This has been remedied by the present management, and the mine is now well ventilated. A great deal of cleaning and timbering have been done, and much lost ground reclaimed. Large quantities of various kinds of timber are being used on the necessary repair. The main slope, pipe-way, and air-courses have been put in thorough repair.

In the development of the 4000 feet lift, it was feared that work on the east side would be interfered with by the Aberdeen fault, which had proved rather expensive to penetrate in the past. The present management, however, has passed through this fault without loss of output or time, demonstrating that to the rise this fault is not a serious obstacle.

Good progress has been made in putting the permanent ways in good condition. Development work in east 3300-feet level, and 4000 feet lift, has proceeded rapidly. No. 2 seam in the 4000 feet lift is upholding its reputation for the excellent quality of coal, and is continuing its usual height.

Underground Development.

No. 2 Mine.

Main Slope	120 feet	Total 4215 feet	from surface
3300 feet level, East	1600 feet	" 6790 "	slope
4000 " "	1740 "	" 2138 "	"
4000 " "	1820 "	" 2140 "	

No. 1 Seam.

3300 feet tunnel, East, West level, 220 feet. Total 412 feet from tunnel.

This tunnel driven from the 3300 feet level, east of No. 2 slope has opened a large area of No. 1 seam. The seam is five feet six inches high, of the best quality, and clean from roof to pavement.

The 2800 feet level now being opened, will be used to recover large fields of coal in No. 1 and No. 2 seams, the getting of which was impracticable after the fire in No. 1 slope in 1896. No. 1 slope was abandoned at the time, but a large quantity of coal was recovered through a tunnel from No. 2 seam at the 2400 feet lift.

The lamp used is the bonneted Marsaut.

There are 500 men and boys employed underground.

Officers.

John R. Sharpe, district superintendent.

W. D. Matthews, manager.

W. R. Wilson, assistant manager.

Wm. Lorimer, underground manager.

Moses Jones, overman.

George Burden, overman.

J. C. McNeil, overman.

Burton Langille, overman.

Wm. Harris, overman.

The mine is dry in sections, and water is conveyed in ¾ inch pipes from pumps to sprinkle the dry places.

Surface Machinery.

One hoisting engine, direct acting, 1544 h. p.

One fan engine, 218 h. p.

One tubular-boiler, 200 h. p.

One Lancashire, 174 h. p.

One Robb-Mumford, 180 h. p.

One Mumford, 150 h. p.

One Capell blow-fan, 15 feet in diameter, 5 feet wide—capacity 130,000 cubic feet a minute.

Underground Machinery.

One haulage engine, 250 h. p., with four friction drums, five feet diameter.

There are 300,000 gallons of water pumped daily from the mine through a ten inch pipe line, lined with wood.

One Jeansville pump, 30 by 9 by 36 inches, 675 gallons a minute at 1300 feet lift.

One Jeansville pump, 22 by 7 by 24 inches, 550 gallons a minute, at 2400 feet lift.

One single Blake pump, 28 by 11½ by 36 inches, 500 gallons a minute, at the 3300 feet lift.

One auxiliary Blake pump, 28 by 11½ by 36 inches, at the 3300 feet lift.

One Cameron pump, 12 by 4 by 18 inches, in the sinking.

Rails.

6,000	yards	40 lb.
23,000	"	18 "
1,000	"	12 "

Timber used during the year.

Props.	Length in feet,	Diameter small end,	Number of pieces,	Lineal feet total.
"	4	4	6,323	25,292
"	5½	5	10,867	59,768
"	7	5	871	6,097
"	8	5	12,372	98,976
"	10	5	24,642	246,420
"	12	5	2,627	31,524
				468,077
Booms,	10	6	17,312	173,120
"	12	6	633	7,596
"	14	6	2,925	40,950
"	14	8	275	3,850
"	10½	9	2,962	31,100
"	12	10	977	1,724
"	14	10	600	8,400
"	18	10	16	288
"	18	12	9	192
"	19	12	5	95
"	20	14	4	80
				267,395

Sleepers	1,045,486
Boards	149,911
Timber, 10 by 10 inches	11,847
Planks	18,608
Deals	12,192

SPRINGHILL NO. 3.

Operated by the Dominion Coal Company.

The bank-head is of wood, housed with corrugated iron. It is equipped with shaker-screens and picking-belts capable of handling 2000 tons a day of 10 hours. A coal conveyor, timber hoist, four revolving tipples, and scales are under the same roof. The whole forming an imposing structure. Near the bank-house is the fan-house of brick and cement. The fan is driven by an engine 22 by 30 inches directly connected. The hoisting-engine house is of wooden frame covered with corrugated iron. There are a fire station and car repair-shop built of the same material.

The seam is called No. 3 or North seam, it is the overlying seam of the series. Its thickness is from ten feet six inches to four feet two inches. The thickest places are in the west section. The east is the low coal section. The steepest portion is in the extreme west. The seam pitches from twenty to sixty degrees.

No. 3 slopes is 4,800 feet long, 3,200 feet of which is 10 by 7 feet. The remaining 1600 feet is 8 by 7 feet. Coal is being hoisted from the 2600, 3200, and 3800 feet lifts. The mine is worked bord-and-pillar. The bords are 10 feet wide, pillars 40 feet thick. The railway pillars are 90 feet thick. Horse haulage is used on the 2600 and 2800 levels, and main and tail-rope haulage on the 3200 level. The haulage engine is situated on the 1300 feet evel. The haulage ways are all in good order.

There are 130,000 cubic feet of air a minute in circulation, with 136 fan revolutions a minute and w. g. 7.5 inches. Bonneted Marsaut safety lamps are used. The average quantity of water pumped daily is 500,000 gallons. The 3800 feet level is somewhat dry and is sprinkled by tank and sprayed.

There has been practically no development work done in this slope during the year, the mine being idle. The efforts of the management have been directed to cleaning and re-timbering levels. Heavy falls in all the main ways and in the workings occurred during the strike. The 3800 level has been cleaned and re-timbered and is now in good condition. This level is 8,500 feet long and gives an output of 400 tons a day. The 3,200 level is in good order for 2500 feet. There are 500 feet yet to repair. This level is producing 250 tons a day. The 2600 level has been cleaned 1500 feet, 400 feet yet to be repaired. The work of repairing east return is being pushed vigorously, 2600 feet is now in good order.

Surface Machinery.

One Capell fan, 15 by 5 feet, capacity 130,000 cubic feet a minute. 160 revolutions, w. g. 6.6 inches at No. 2 Slope.

One Capell Fan, 22 by 3 feet, 6 inches, capacity 120,000 cubic feet a minute, 130 revolutions, w. g. 6.5 inches at No. 3 Slope.

One Capell Fan, 18 by 4 feet, 6 inches, capacity 150,000 cubic feet a minute, 170 revolutions, w. g. 7 inches.

Underground machinery.

One Jeansville Duplex pump, 38 by 25 by 10 by 36 inches: capacity 750 gallons a minute, at 1300 lift.

One Jeansville duplex pump, 40 by 23 by 10 by 36 inches: capacity 750 gallons a minute, at 3200 lift.

One Cameron pump, 24 by 9 by 18 inches: capacity 300 gallong a minute, at 3800 lift.

One Cameron pump, 12 by 4 by 16 inches, in the sinking.

Timber used in Mine.

Pit Props	152,840	lineal feet.
Square Timber	10,220	" "
Booms	215,336	" "

Rails in mine.

11000 feet of 40 lb.; 23000 feet of 30 lb.; 32000 feet of 18 lb.; and 900 feet of 12 lb.

JOGGINS MINES.

Owned and operated by the Maritime Coal, Railway & Power Company, Limited.

The slopes are 3000 feet from the surface to the main deep. The main slope is 10 by 10 feet, with two return slopes 5 by 9 feet, all in good condition. The pitch of the slope is 17 degrees. The mine is worked bord-and-pillar in the undersea area, and longwall elsewhere. The bankhead is of wood and iron, and contains two revolving coal tipples, two sets of weigh-hoppers, shaking screens, and picking belt.

The colliery buildings are haulage engine and compressor house, man-engine house, warehouse, carpenter and blacksmith shop, and lamp cabin. These buildings have wooden frames with metal roof and walls.

The seam is the Joggins-main, four feet thick, pitching 17 degrees.

Development Work.

Levels No. 1, 2 and 3 have all been driven 500 feet, and balances driven up. The traveling ways are in good condition. Endless haulage is used on main slope; and on No. 1 Level, East, endless rope with trips. The hauling on other levels is done by horses. All the haulage roads are in good condition. The main-haulage rope is 1⅛ inch and the rope on the man-slope is ⅞ inch.

There are 30,000 cubic feet of air a minute in circulation.

The air-shaft is 8 by 10 feet, with fan-drift 8 by 10 feet. There are two air-splits in the mine— one at No. 1 landing, and one at No. 2 landing. The mean temperature is 54 degrees, and the barometric pressure 30.6 inches. Marsaut safety-lamps are used and give good satisfaction.

There are 45,000 gallons of water pumped daily by an electrically operated Jeansville pump.

This mine is not dry and sprinkling is not necessary.

Explosives.

There were used last year 15,359 lb. Acadia pellet and 3,163 lb. Saxonite, about 8 tons of coal being produced for each pound of powder used.

The output for the year was 149,670 tons.

The men employed in each section are as follows :

Section 1	80	men
" 2	70	"
" 3	110	"
Total	260	

Officials.

Geo. B. Burchell, manager.
Samuel Gray, under manager.
James Fairley, overman.
John Graham, "
John McKenzie, "

Surface machinery.

Four Lancashire boilers, 75 h. p. each, two of which are in use.

One haulage engine, 18 by 36 inches, geared 1 in 5 to 5 feet bullwheel.

One man-engine, 10 by 13 inches, geared 1 in 5½ to a 5 feet drum.

One compressor, 22 by 24 inches, producing 1200 cubic feet of air a minute.

One bankhead motor, 48 h. p. with 50 h. p. auxiliary.

One Leonard engine, 8 by 8 inches in machine shop.

One Capell fan, 7 feet diameter by 4 feet, connected to a 100 h. p. 1100 volt induction motor, with maximum speed of 400 revolutions a minute.

One Sturtevant fan 8 by 3 feet, 8 inches, belt driven by a 12 inch engine.

One boiler-feed duplex pump, 6 by 4 by 6 inches.

One fire pump, duplex Northey, 7 by 7 by 10 inches.

One 75 h. p. electric turbine pump with auxiliary steam Jeansville pump, 16 by 5 by 10 inches, for water supply.

Underground Machinery.

One engine, 9½ by 10 inches, geared 1 in 5 to a 2 feet 6 inch bull wheel—operated by compressed air: hauling in level.

One engine, 6 by 8 inches, in sinking, geared 1 in 4½ to an 18 inch drum.

One 220 volt motor, driven double, reduction geared.

One 3 plunger Jeansville pump, 5 inch plungers with 12 inch stroke.

One 40 h. p. motor, auxiliary, operated by air.

One Cameron pump 18 by 5 by 36 inches.

One auxiliary Jeansville sinking-pump, 16 by 5 by 10 inches, operated by air.

One 30 h. p. 220 volt motor-driven hoist, 20 inch drum, hauling on incline.

One pick-quick longwall mining machine, driven by an 18 h. p. 220 volt motor.

Timber used in the mine.

Pit props, 6 inches diameter, small end....	49,891	lineal	feet
Butts, 5 inches small end....................	479,952	"	"
Booms, 7, 8 and 9 inches in diameter..........	47,653	"	"
Sleepers	37,485	"	"
Oak butts, 4 inches square.....	2,000	"	"

Rails.

30,000 feet 36 lb. 8,500 feet 26 lb. 40,000 feet 18 lb. and 48,000 feet 12 lb.

Everything in and around this colliery is in good condition.

CHIGNECTO MINE.

Owned and operated by the Maritime Coal, Railway & Power Company, Limited.

This mine is worked by a slope, 2000 feet long, 10 by 8 feet high, in the Chignecto Seam—six feet thick, pitching 28 degrees. The air-slope is 8 by 8 feet. These slopes are in good condition. The method of working is bord-and-pillar. The bankhead is of wood and iron with two revolving tipples. shaking screens and picking-belts. The machine shop, carpenter's shop, blacksmith's shop and engine-house are of wood.

About 300 feet of development work has been done on the 1000 feet level west. A level has been driven with two balances and bords broken off. The traveling way is in fair condition.

About 35,000 cubic feet of air a minute is in circulation, produced by a Murphy fan operated by a 50 h. p. electric motor. The fan-drift is 8 by 10 feet. Marsant safety-lamps are in use.

Pumping is done by a duplex Jeansville pump, 30 by 4 by 24 inches. About 25,000 gallons of water are pumped daily. The water line and the steam line are each 4 inches in diameter. The mine is fairly dry but sprinkling is not necessary.

Sixty-five men are employed underground.

Officials.

T. J. McDonald, manager.

Chas. J. Kent, undermanager.

The output for the year, was 14,093 tons.

960 pounds of black powder were used. The mean temperature of the mine is 60 degrees—barometric pressure 30.8 inches.

This mine is in safe condition and has plenty of ventilation for all purposes.

Surface machinery.

One hoisting engine, 18 by 30 inches, geared 5 in 1 to a friction drum 10 feet in diameter, with rope 1-⅛ inches.

Timber used in mine.

Props, 6 inches diameter, small end....	36,084	lineal feet.
Booms 7 " " " "	7,630	" "
Sleepers	2,360	" "
Butts	21,320	" "

Rails.

3,000 feet of 18 ℔. and 1800 feet of 12 ℔.

GREAT NORTHERN MINE, MACCAN.

This mine is situated within a quarter of a mile west of Chignecto mine. During the first five months of this year work was fairly steady, but on the 21st of June last it ceased operations, and since then there has been no one on the ground in official capacity, except the pump-man who is keeping the mine unwatered. The pit was in fairly good order when stopped. During work this year Mr. Geo. Irvin was manager, and there were several underground managers in charge during that time. About 5,000 cubic feet of air a minute were in circulation, and ten men were employed.

Machinery.

One friction.drum hoist 10-inch cylinder-geared 3 to 1.

One 30 h. p. boiler, locomotive type.

One Northey pump, 5 by 2½ by 5 inches.

No output reported.

BLACK DIAMOND MINE.

Owned and operated by the Maritime Coal, Railway & Power Co., Limited.

This mine produced 2641 tons of coal during the year. It is situated about two miles to the west of Maccan River. The seam is about 30 inches thick, of good quality, and pitches about 18 degrees. Work was stopped in July last. The company purpose to equip this mine later with electric longwall machines.

Machinery.

Two 30 h. p. boilers.

One friction-drum hoist 10 inch cylinders, geared 3 to 1.

One Northey pump, 5 by 2½ by 4½ inches.

MAPLE LEAF MINE.

Owned by the Maritime Coal, Railway and Powder Co., Limited.

Considerable development work is being done, and additional plant erected. The product of the mine is hauled by teams to River Hebert and loaded into cars on a spur of the Joggins railway.

About 100 tons of coal were taken out. The machinery used here was that used at Black Diamond mine.

A. V. CAMERON,

Deputy Inspector of Mines.

Report of Accidents in Coal Mines of Nova Scotia (Cumberland District) Year ended September 30th, 1911.

No.	Date 1910	Mine.	Name.	Age	Remarks.	Fatal
1	Nov. 10	Black Diamond	Elvin Long	26	Miner. Fall of stone. Broken leg.	
2	May 12	Great Northren.	E. Hardcastle....	33	" " " Killed. Accidental.	1
3	" 22	Minudie	Alex. Coseric		" Burnt with gas.	
4	" 22	"	Joc Porter.		" " " "	
5			Wincell Kohitt....		" " " "	
6	Aug. 31	Springhill. ...	Joseph Gilroy ...	28	Brakeman. Jammed by cars. Killed instantly.	1
7	Sept. 9	No. 2 S. Hill ..	Donald Beaton....	15	Trapper. Caught by box. Broken arm.	

SPECIAL REPORTS

PORT HAWKESBURY, N. S.
January 4th., 1912.

HIRAM DONKIN, ESQ.,
Deputy Commissioner of Public Works and Mines,
Halifax, N. S.,

Dear Sir:—

I beg leave to submit to you my report on the flooding of the Port Hood mine in the Inverness district.

I was first informed of the fact that the mine was being flooded, on Friday, June 23d, at about 10 a. m., while inspecting the Inverness mine. I immediately came to the surface and found that Superintendent McGillivray had a train in readiness to carry me to Port Hood, where I arrived at 2 p. m.

About 2 p. m. on Thursday, June 22d, underground manager Doyle was advised that water was showing on the roof of No. 7 pillar, No. 1 balance, off No. 5, north level. He went at once to inspect the place and found only a few drops coming from the roof, the quantity being so small that it could not be estimated. He did not consider the matter serious as the pillar was "working" and gave indications that a "fall" would soon occur. In his experience he had frequently seen that just previously to a "fall" taking place some water would be given off through cracks in the roof; this would cease shortly after the fall had occurred. General Manager Law was in the mine at the time and heard that a large feeder of water was coming into the mine he immediately visited the section in company with pillar boss Arents. Arents is a man of considerable experience in work of this nature under similar conditions. He was appointed for the express purpose of instructing the miners in the working of pillars in the best and safest possible manner.

Mr. Law found conditions exactly as under-ground manager Doyle found them, and after calculating the cover (which at this point is 941 feet) he also concluded that everything was all right and that there was nothing to fear. The only point on which there is any difference of opinion is that of determining definitely the exact point at which the water was first noticed. To make this clear it will be necessary to refer to the state of the workings in this pillar. The previous fall came to within 25 feet of a cross-cut between No. 7 and 8 pillars. The pillar was then worked out toward the head for about 12 feet; the roof being very bad, they proceeded to work from the head in toward the fall. The head was originally about 6 feet wide and they had about 3 feet worked off, making the opening now about 9 feet wide with a stump inside between them and the fall of about 10 feet. Mr. Law claims that where he first saw the water was in the head, while Mr. Doyle says that where he first saw it was inside of the stump. My impression on entering this section on 23d, June, was that a considerable area overhead contained a surplus of water as it was dripping freely all about, and for some distance out along the roadway.

Mr. Doyle before leaving the mine at 6 p. m., of the 22d, warned the night overman to pay particular attention to the place as he expected a fall. Shortly after 6 p. m. Mr. Doyle was sent for and on going into the mine found that No. 7, 8, and 9 pillars had fallen and that a large quantity of water was coming in over the fall. Mine manager Henderson being absent, Mr. Doyle immediately sent for the General Manager; they went into the second head inside of the back-balance, where they found water was coming down the full width of the head and about a foot deep. They then went up the back-balance to No. 7 bord and in this to where the pillar had fallen; here they found water coming over the fall in both No. 7 and 8 pillars. On this inspection no water could be seen in head in which it was first noticed by Mr. Law.

They then started the pump (capacity 54 gallons a minute) which is placed below No. 5 level and about 50 feet from the face of slopes. Here they found that with the pump running full speed the water had gained 5 feet in an hour, and that the pump at No. 4 level was unable to handle all the water that was being delivered to it from No. 5 pump. This is easily understood as the size of the pump at No. 4 is but 5 inches by 3½ inches by 7 inches. The mechanics were sent for and instructed to transfer the pump from the feed-water supply borehole on surface to No. 4. This pump was got to No. 4, but was not set up, as at midnight No. 5 pump was under water. The lodgment below No. 5 low-level consisted only of two slopes each about 50 feet long and 6 by 8 feet in area and a cross-cut between about 40 feet long and 6 by 6 feet in area. The entire capacity of the pumps would only be about 110 gallons a minute to the surface. The pump below No.

5 that handled all the water below No. 4, had a capacity of about 54 gallons a minute delivering to No. 4 pump. These pumps were of sufficient capacity to handle all the water made by the mine previously to the break in the pillar section, by working 12 hours out of the 24.

Mine manager Henderson arrived at the mine about 5 a. m., Friday, 23d. He proceeded to the mine and met the other officials at No. 5 high-level. At this time the water was up to the low-side of No. 5 level, and a stream about 3 feet wide and about 1 foot deep was running out the lower road of this landing. They then went up the back-balance and found that the water was coming in over the falls in No. 6, 7, and 8 pillars; it also showed on the roof outside of the pillar falls for some distance.

After consultation it was decided to confine the water to this area, if possible, by building dams in the balance and heads off the level and finally in the head through barrier pillar to No. 4 low-level. It was at this time that I was telegraphed for to Inverness. A number of men were started to work preparing places for the dams, and material for the construction of same was being gathered. At 9 a. m. the officials again entered the mine and found the work progressing very well, but the water was rising so rapidly that the work of building these dams had to be abandoned at 11 a. m. On my arrival I immediately tasted the water entering the mine and concluded it was sea-water. We then considered the advisability of constructing dams in the heads through the barrier pillar and on the slope at a point about 50 feet below No. 4 low level; this would mean the construction of five dams. I felt that owing to the great pressure that had to be contended with it would be impossible to construct anything in so short a time that would withstand the pressure. However, it appeared to be the only thing to do under the circumstances and it was considered advisable to try it. At this time it was difficult to get men; it was only on receipt of your wire guaranteeing their pay that we got sufficient men to start the work. Work on these dams commenced about 3 p. m. on Friday, 23d. Reference to the size of bottom lodgment is sufficient to show what a short time there was available for the construction of dams capable of confining any considerable inflow of water to the north side of No. 5 landing. And, when the nature of the roof (5 to 10 feet of fireclay and 20 to 30 feet of weak sandstone overlying it) is taken into consideration together with the fact that the dams would be required to stand a pressure of over 400 pounds to the square inch, I think it will be conceded an impossibility, particularly as there was a shortage of suitable material to do the work properly. The work was however proceeded with until 12 p.m. on Sunday, 25th, at which time the water was upon the men and they were forced to give up the work before completing same. After this no further attempt was made to retard the inflow: all effort was directed to the saving of pumps, boxes, rails, pipes, etc.

On Sunday, Mr. Tkomas Blackwood, deputy mine inspector, Pictou, arrived on the ground and with the officials and myself proceeded into the mine, but made no proposals other than what was being done. All having tasted the water we were unanimous in the belief that it was sea-water. As the water in the mine is salt, and in view of the fact that a report was current to the effect that the source of the inflow into the mine was none other than "Little River;" we put down a number of holes in the sand, which resulted as follows:—

Hole 400 feet from high-water.	Found fresh water.
" 250 " " "	" " "
" 50 " " "	" " "
" 10 " " "	Found brackish, not as salt as sea-water.
" 5 " " "	Found salt water.

The actual depth of sand along the beach over the workings is known at only one point, about 750 feet from the mouth of slope, measuring on the surface. A borehole was put down here a depth of 36 feet through sand, at this depth a band of red clay was struck and no attempt was made to go through it. This clay shows on the shore and is about 4 feet thick, under it is sandstone.

No soundings were taken as workings had not extended to the end of shipping pier; the depth of water there was known to be 17 feet.

Attached is a statement of observations that have been taken relatively to the rise of the water in the mine; and latterly the rise and fall of the water in the slope, at a point (according to checked survey) approximately 13 feet vertically lower than high-water, December 22d, 1911.

Owing to the sides and roof of slope giving away, the mud from which has formed a dam on the slope, the slope distance to the waters edge has not shown any material difference since 15th, November, at which time it measured 145 feet to the slope mouth.

Yours respectfully,

W. F. Davis,

Deputy Inspector.

Observations relating to the rise of water in Port Hood mine.

Date 1911	Time	Vertical rise in inches and time	Vert'l fall in inches	Slope distance from wt'rs edge to mouth of slope in feet.	Remarks.
June 22	8.00 p.m.				Roof crushed in pillars, No. 1 balance, No. 5, north level, great volumes of water coming in.
" 22	12.00 p.m.				Lost sinking pump.
" 23	7.00 a.m.	1 in 1-½ min.			
" 24	7.00 a.m.	1 in 2 min.			
" 24	3.00 p.m.	1 in 3 min.			
" 25	7.00 a.m.	1 in 3 min.			
" 25	7.00 p.m.	1 in 1 min.			
" 25	12.00 p.m.				Reached No. 4 low-level.
" 26	7.00 a.m.	1 in 2 min.			
" 26	2.00 p.m.				Reached No. 4 high level.
" 27	7.00 a.m.	1 in 5 min.			Water 100 feet above No. 4 ; or a total of 655 feet from face of sinking.
" 28	7.00 a.m.	1 in 4 min.			
" 29	8.30 a.m.	1 in 7-½ min.			
" 30	3.30 p.m.	1 in 10 min.			
July 1 to " 7		varying from 1 in 5 to 1 in 10 min.			
" 7	7.00 a.m.	1 in 5 min.			Water now in No. 3 low-level.
" 8 to " 14		varying from 1 in 5 to 1 in 10 min.			Water has reached No. 2 low-level.

Observations relating to the rise of water in Port Hood mine.

Date 1911	Time	Vertical rise in inches and time	Vert'l fall in inches	Slope distance from wt'rs edge to mouth of slope in feet	Remarks.
July 16	....	1 in 9 min....	....	....	Water at No. 2 high-level.
" 17 to " 30	....	averaging 1 in 9 min....	....	....	
" 31	....	1 in 10 min...	....	....	Water has reached No. 1 high-level.
Aug 1 to " 10	....	varying from 1 in 12 to 1 in 8 min....	....	650	
" 10 to " 21	....	1 in 14 min...	....	250	
" 21 to " 24	....	....	....	222	
" 25	10.00 a.m.	....	....	216	
" 25	4.30 p.m.	....	....	211	
" 28	10.30 a.m.	....	....	202	
" 30	11.30 a.m.	....	....	200	
" 31	11.30 a.m.	....	....	198	
Sept. 1	11.45 a.m.	....	....	196	
" 2	11.30 a.m.	....	....	193	
" 5	10.30 a.m.	....	....	184	
" 7	11.00 a.m.	....	....	178	

"	8	11.00 a.m.	....	....	176
"	11	11.00 a.m.	....	....	170
"	18	11.00 a.m.	....	....	160
Oct.	3	9.30 a.m.	....	....	158
"	4	8.30 a.m.	raised 1 inch.	....	....
"	4	5.00 p.m.	" ¼ inch.	....	....
"	5	9.00 a.m.	" 6 inches	....	....
"	5	5.00 p.m.	" ¼ inch.	....	....
"	6	9.00 a.m.	" ¼ inch.	....	....
"	6	5.00 p.m.	" ¼ inch.	....	....
"	9	2.00 p.m.	" 1-¼ in.	....	....
"	12	5.00 p.m.	....	....	157
"	31	8.00 a.m.	....	....	155
Nov.	15	10.00 a.m.	....	....	145
"	15	10.00 a.m. to 11.00 a.m.	....	.5	....
"	15	11.00 a.m. to 4.15 p.m.	4.5	....	....
" 15 to " 16		4.15 p.m. 9.30 a.m.	10.	....	....
"	16	9.30 a.m. to 12.30 p.m.	....	3.25	....

Observations relating to the rise of water in Port Hood mine.

Date 1911	Time	Vertical rise in inches and time	Vert'l fall in inches	Slope distance from wt'rs edge to mouth or slope in feet	Remarks
Nov. 16	12.30 p.m. to 5.00 p.m.	2.25	....	....	
Dec. 6	9.00 a.m. to 11.00 a.m.	1.	....	....	
" 6	11.00 a.m. to 2.00 p.m.	....	1.	....	
" 6	2.00 p.m. to 6.30 p.m.	4.5	....	....	
" 6 to " 7	6.30 p.m. 8.30 a.m.	....	....	....	
" 7	8.30 a.m. to 11.30 a.m.	2.	....	....	
" 7	11.30 a.m. to 4.00 p.m.	....	1.5	....	

" 21 to " 22	[a.m. Hg-water 8.30 a.m.	....	13.75	....
" 22	8.30 a.m. to 11 30 a.m.	3.	....	....
" 22	11.30 a.m. to 4.00 p.m.	....	2.75	....
" 22	4.00 p.m. to 6.00 p.m.	1.	....	....

EXPLOSION, SYDNEY NO. 3.

About 3.45 A. M. the 3d of January, 1911, a violent explosion took place in No. 3 Colliery, killing 8 men, 2 deputies and six men who were working on the main slope, 8,000 feet from the mouth of slope.

There were 14 men in the mine when the explosion occured.

Hugh Dickson was deputy in the Angle Deep section, John R. McIntyre deputy in No. 8 and No. 9 south, Harry Purchase, No. 10 and No. 11 south, and Archie Ferguson, deputy in No. 12, 13 and 14 south.

Dickson and McIntyre examined their places that morning and did not notice any change in the ventilation when making their examination and were not aware that anything unusual had taken place until they met Mr. Hill, the underground manager, on his way down to the scene of the disaster. James Bond, pumpman, at No. 3 landing, about 1,500 feet from the mouth of slope, felt a slight concussion. Arthur Jones, who was tending a pump in the angle deep stated that the pump stopped and that he was under the impression that there was something wrong with the air-line or the compressors: did not notice anything wrong with the ventilation. Luke Reshore was at No. 6 on his way home, and felt a great force of air and dust mixed with it. This was about 3,000 feet from the mouth of slope.

Mr. Ferguson the manager went down the mine at 4.30 A. M. Mr. Hill, the underground manager, between 5 and 6 A. M. Mr. Brown, superintendent, Mr. Johnstone, and a number of officials with the colliery doctors, arrived soon after, and with about 200 men, a number of them with the Draegar Breathing Apparatus, went down the mine in hope of rescuing some of the men alive, but at the first glance at the condition that existed below No. 11 landing, we knew that those men who were working on the deep and the two deputies were beyond any human aid. The management at once set to work to restore the ventilation. The men were divided into three shifts, about 100 men on each shift, and the work of searching continued day and night until the last body was found. Temporary stoppings had to be built and places retimbered as the work of rescue progressed.

On No. 9 south level, a stopping between the two levels in No. 12 crosscut from the traveling road, was blown down On No. 10 landing, stoppings 13, 15 and 18 between the two levels were blown down. On No. 11 level, stoppings in No. 3, 4, 5, 6, 7, 8 and 11 crosscuts between the two levels were blown down and three stoppings on the high side of the level between it and No. 1 room; all the stoppings below No. 11 landing, between the main deep, and between the back-deep and the main deep: and all in the room ends between No. 11 and No. 14 landings, except three, were blown down, a distance of 2,250 feet. In all there were 77 brick and 60 wooden stoppings blown down. All the props on the back deep and pipe-deep, below No. 11 landing were blown out, a distance of 2,250 feet. A small haulage engine that was placed in No. 1 room on the traveling road was broken and shifted about 4½ feet in a northerly direction. Coal boxes were smashed into kindling wood, rails and air pipes twisted as so much fine wire: 38 rooms and 6 levels lost. New headways had to be driven from No. 12, 13, and 14 levels to recover these places.

About 2.30 p. m. on the afternoon of the explosion, the bodies of Eugene Reed, James Messervey, Arthur Amey, Brian Murphy, John Wade (Mahoney), and Israel Parsons, were found on the deep where they had been working. Some of the bodies were badly mangled. On the 5th of January at 2. 30 P. M. the body of Harry Purchase was found, 350 feet inside the barrier crosscut on No. 11 main level. His head was toward the slope, which indicated that he was making his way back to the slope.

On the 8th of January at 3.45 A. M. the body of Archie Ferguson was found in a crosscut, 4 feet below the road, and 13 feet from the face of No. 12 room. His stick lying across the rail, his lamp open, the bottom about 2 feet from the top, lay in the centre of the road.

This ended our search, and the open lamp explained the cause of the explosion.

I always considered this mine to be one of the safest in my district. Gas has only been reported twice in that section during the year 1910.

NEIL A. NICHOLSON,

Deputy Inspector of Mines.

T. J. Brown, Esq.,

General Superintendent, Nova Scotia Steel & Coal Company.

Sydney Mines., N. S.

Dear Sir:—

We, the undersigned commission appointed by you to find out the cause of the explosion in your No. 3 colliery, on the morning of January 3d, and ascertain, if possible, if coal dust played any part in propagating the explosion, and extending its force, beg leave to report as follows.

The initial explosion took place in No. 12 room, on No. 12 landing, about 13 feet from the face. This conclusion we came to; because Ferguson's body was found at this point, with his lamp unlocked and open as if he were in the act of relighting it. We think there was not very much gas there, if there had been, he would not have been found so near the face. We cannot believe that a man of his experience would travel towards the face if he had lost his light, before getting in that far. It would be more reasonable to believe that he got in further and came out to this crosscut to relight his lamp. Some one might contend that there was gas in the rooms below. We could not find any indications of the force coming up at any point between No. 12 room and No. 12 level. In fact, we found indications of the force going down as near to the face as the inside crosscut between No. 10 and No. 11 rooms. This all points to the initital explosion being about No. 10 room.

From this point we traced the explosion out the rooms on No. 12south and down towards No. 13 and 14 landings. The cause of it traveling in this direction was that there was a barrier on the high side of No 12 room, between it and No. 11 lower level, with only one opening of about 5 by 10 feet and 90 feet long. This prevented the gas from expanding in a westerly direction, and the solid coal along the face kept the gas from expanding in a southerly direction. Consequently it expanded toward the point of least resistance, which was north and east, out the rooms toward the main deep, and down through the cross-cuts toward No. 14 section. The direction of the force is visible in nearly all the rooms and cross-cuts in No. 12, No. 13 and No. 14 sections.

We did not find any perceptible indications of intense heat at any point in the inside part of this section, until we came out to the first headway inside the traveling road, on No. 12 south section. Here we found the props between No. 9 and No. 1 covered with coked dust from there to the stopping near the traveling road, which is on the south back-deep. These rooms are broken off the said back-deep, 12 feet wide, which greatly reduced the area, consequently greatly increased the velocity of the explosion.

The rooms were closed, near the entrance, by brick stoppings which were all blown down except three. The next place that we discovered any signs of heat was in No. 1 room, No. 13 south section, at the second cross-cut inside of the traveling road. While we had signs of heat here, it was not at all so intense as at No. 12 section. The only indication we had there was finding coked dust adhering to the timber. The timbers were not charred or scorched as they were in No. 12. A piece of birch bark was found in a cross-cut between the second and third room on No. 14 south. This was very likely carried there by the force of the explosion, as there were no other signs of heat anywhere around where it was found. We then found traces of coked dust in No. 13 and No. 14 north, but the indications here were not as plain as in No. 12 or No. 13 south.

If we consider the analyses taken in parts of the mine which were not affected by the explosion, viz., sample 1 taken near the working faces on No. 11 landing, which contains 35% volatile matter, and also sample 14 taken from near the face of No. 13 south level, and reported by Mr. Johnston as not being affected by the explosion, and by comparing the average of all the other analyses taken, would give us about 10% volatile matter distilled from the dust, over which the flame of the explosion traveled. If we accept this as being the case, it will give us an idea of the part that coal dust played in propagating the explosion.

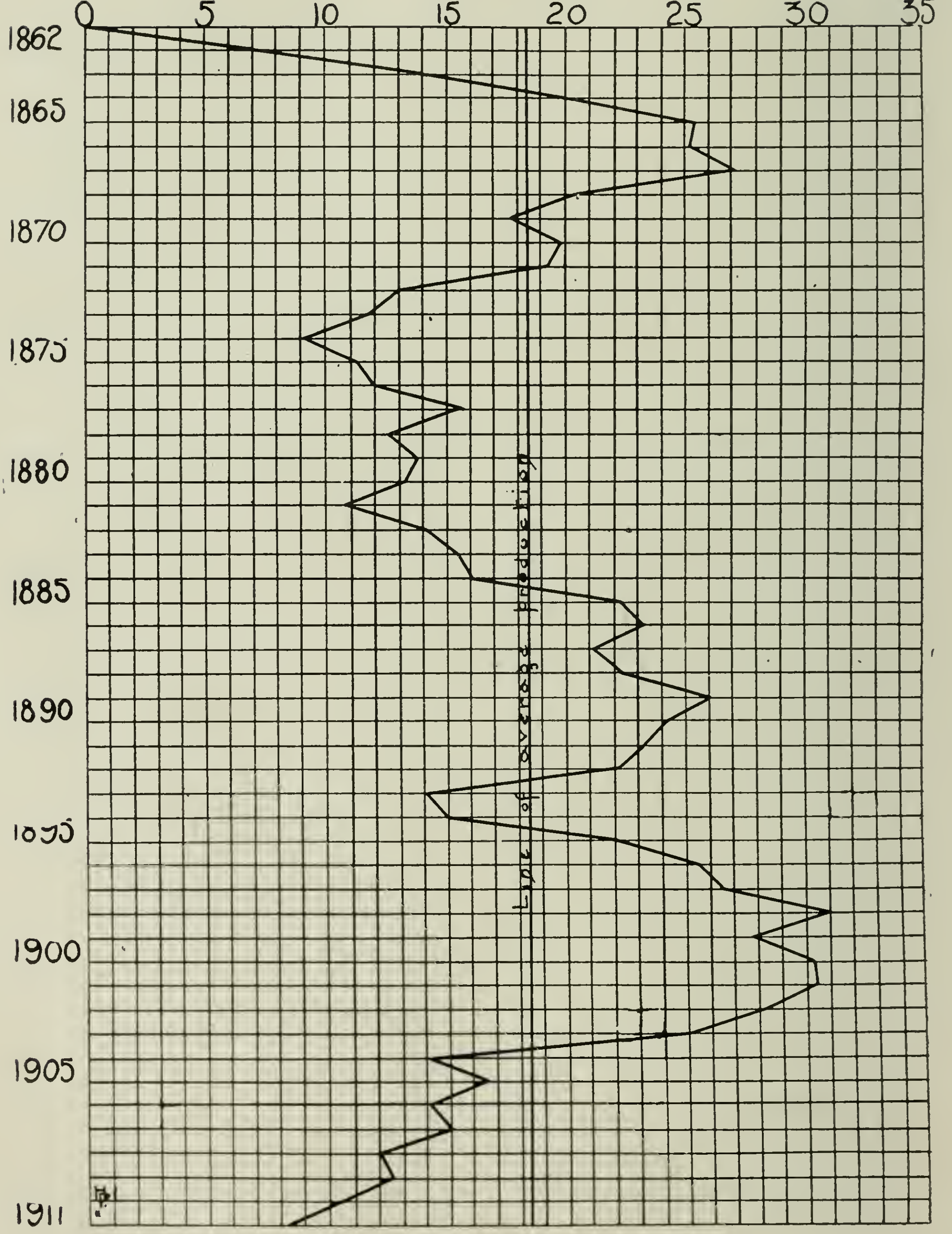
The only difficulty in following this reasoning is, that the analyses show more heat near the face of No. 12 and No. 11 rooms where there is no perceptible indication of heat than it does on the first headway, in this same section between No. 1 and No. 9 rooms, where the visible indications show an intense heat. The only theory that we can suggest to support this is, that there was a back dust-wave which covered up these visible indications from the first headway toward the face. We have indications of a back wave in No. 12 room, as the light dust is settled on the inside of the few timber left standing.

According to Mallard and LeChatelier, coal dust containing more than 30% of volatile matter is inflammable. Taffanel claims that the amount of dust necessary to propagate a flame is .07 oz. a cubic feet.

Assuming that the above authorities are correct, which we believe beyond a shadow of a doubt, we think that it is safe for us to conclude that coal dust played a very large part in the explosion in your mine; as the dust in its normal state contained more than 35% volatile matter, and no doubt was in sufficient quantity to charge the air with the required amount to bring it up to an explosive mixture when sufficient heat was supplied.

John Johnston, chairman.
John J. McNeil, deputy inspector of mines.
Neil A. Nicholson, deputy inspector of mines.
James Knowles, miner. Commission.
Peter Coll, miner.
Robert Robson, mining engineer.
N. McKenzie, secretary.

YEARLY YIELD OF GOLD
1862 to 1911



Metalliferous Mines.

From 18,320 tons of gold bearing rock mined and crushed, 8,389 ounces of gold were recovered. This production is less than the production for the year ended September 30th, 1910.

The output of the Iron mines of the Province was 53,595 tons, a slight increase over the 1910 production. The other minerals produced in the Province were Manganese Ore, 150 tons; Antimony concentrates made 191 tons, and Tungsten ore mined 75 tons.

Reports on the gold and other metalliferous mines of the Province by Mr. H. B. Pickings, Deputy Inspector of Mines, will be found in the following pages.

Hiram Donkin, Esq., C. E.,

Deputy Commissioner and Inspector of Mines.

Sir:—I beg to herewith submit to you my report dealing with the metal mine industry of Nova Scotia, for the year ended September 30th, 1911.

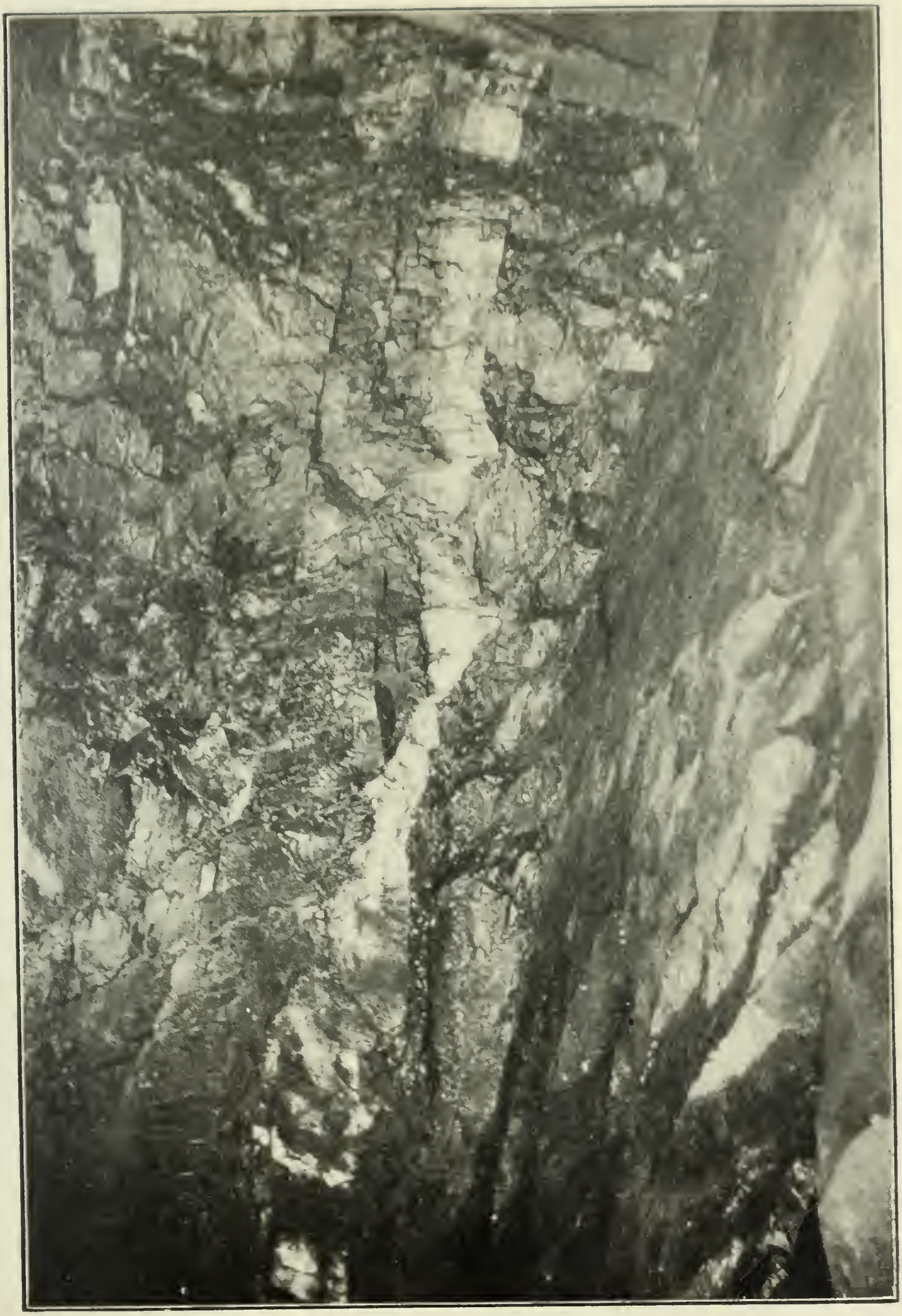
GOLD.

From 18,320 tons of gold bearing rocks, mined and crushed 8,389 ounces, 12 dwts., and 4 grains of gold were recovered, valued (at $19.00 an ounce) $159,411, and being an average yield of $8.70 a ton.

The production when compared with the production of the year ended September 30th, 1910, shows a decrease of 31,237 tons crushed and 2,286 ounces of gold recovered, and an increase of $4.61 in the average yield a ton.

I regret to report that the amount of gold produced is the smallest since the production of the year 1862, and that the tonnage crushed is the smallest tonnage crushed since the year 1882. The direct causes of the small production of the year 1911 may be attributed to the closing down of the Richardson Mine at Goldboro, and the Oldham-Stirling mine at Oldham. These two mines have been in recent years the largest producers of bullion in the Province.

Generally speaking, the Nova Scotia gold-bearing leads are small, and the locating and developing of even small ore bodies therefore necessitate extensive underground workings. Of late years the available capital for the prosecution of gold mining has been altogether insufficient, and of the amount raised and expended the proportion spent on surface equipment has been much too large when compared with the amount going to mine development. Extensive and up-to-date shaft, milling, and concentrating equipments are desirable, but only when the underground conditions of a mine warrant them. Money expended on such equipment over and above the actual necessities to carry on prospecting and development work below ground is, in a great many cases, money thrown away and there are many examples in the Province where expenditures of this kind have left practically nothing for the mine development, which had received but scant attention. Probable ore in Nova Scotia has been rare; proved ore rarer, and it has been quite usual in the past to erect large crushing and other surface equipment on possible ore and then, after expending the



Schoolhouse Lead, Forest Hill. A good example of a small Nova Scotia Quartz Lead

small remaining capital in an effort to keep the surface equipment in operation, abandon the property, and blame the non-success of the venture on the mine, and not on the methods, where it rightly belonged. Nova Scotia is not unique in this respect, but the number of mining ventures carried on here in this manner is surprisingly large, and without a doubt has caused more failures than all other causes combined. Mine development first, erection of permanent shaft, milling and concentration buildings and equipment only when proved ore warrants it, would not have turned all Nova Scotia gold mines into successes, but had this been the rule in general practice, the industry to-day would be in a totally different condition, and would present to investors a much more favourable aspect.

Gold in this Province occurs in ore-shoots or specially enriched zones in quartz veins, both of the interbeded and fissure type, varying in width from one inch to several feet, but usually from 2 inches to 24 inches. Carefully organized prospecting and developing operations carried on *Underground*, with strong financial backing, are needed, and for the individual or company that is prepared to undertake gold mining along these lines, Nova Scotia offers a promising field for operations.

During the year, mining and milling operations were carried on at 18 districts as follows:—

United Finance Company	Carleton.
Caribou Gold Mines	Caribou.
Albert Logan	Caribou.
Stillwater Mining Co. & Tributors	Moose River.
Malcolm McLeod et al	Fifteen mile stream.
H. C. Borden et al	Fifteen mile brook.
Uniac Mines and Power Co.	Gold River.
E. F. Walton	Kemptville.
Petpeswick Mining Company	Lake Catcha.
W. F. Fancy et al	Malaga.
Nova Scotia Gold mines	Montagu.
W. A. Brennan and Tributors	Oldham.
New England Mining Company	Stormont.
Sydney Gold Mining Company	Stormont.
Seal Harbour Leasing Company	Stormont.
Boston & Goldenville Mining Co	Shiers Point.
West Gore Antimony Company	West Gore.
Dominion Leasing Company	Tangier.
E. E. Fraser	Mooseland.
Great Bras d'Or Gold Mining Co	Middle River.
M. J. O'Brien	Renfrew.

Propecting to a greater or less extent was carried on at many other districts. The industry exclusive of management and surface prospectors, gave employment to 300 men.

I regret to report that one fatal accident and one serious accident took place druing the year, particulars of which will be found in the detailed report which follows.

IRON.

The amount of Iron ore mined during the year was 53,995 tons, a slight increase over the output of 1910, but a small production for the province. The Canada Iron Corporation at Torbrook, the only operators during the year, report dull markets and low prices as the reason for their small production.

ANTIMONY.

The West Gore Antimony Company at West Gore did not operate their mine during the year, and the production of 191 tons of concentrates made and shipped was from the milling of dump. This company has for the past two or three years, been engaged in litigation with respect to titles. It is stated that a settlement has been reached and that mining operations are to be resumed during the coming year.

MANGANESE.

But one company was engaged in connection with the mining of this mineral, namely The Nova Scotia Manganese Company at New Ross. As yet no ore other than for test purposes has been shipped. Mine development and surface equipment have received attention and the property will become a producer during the coming year. Recent development at the mine has opened up ore of particularly high grade,; and indicates a bright future for the property.

TUNGSTEN.

No shipments of Tungsten ore have yet been made, but during the year the Scheelite Mines Ltd., have been engaged in mine development and construction of surface equipment and concentrating facilities. Their concentrating mill is now almost completed and they expect to have it in operation by the first of January, 1912. Prospecting for the Tungsten-bearing ore, Scheelite, has been carried on at a number of places in the Province with promising results, notably at Waverley, Halifax County, Fifteen Mile Brook, Queens County, and New Ross, Lunenburg County. At Fifteen Mile Brook, Mr. E. R. Faribault while engaged in field work, discovered Scheelite in a quartz vein a short distance north of where numerous pieces of drift had been previously found by Mr. W. H. Prest.

BARYTES.

No Barytes ore was mined during the year. At Lake Ainslie, the "Barytes Limited", a company organized during the year has been engaged in the construction of an up-to-date Barytes mill which will shortly be in operation.

A detailed report covering the metal mining industry of the Province will be found in the following pages.

GOLD.

GUYSBORO COUNTY.

Goldboro.

New Englaud Mining Company. John Warner..............superintendent.
(*Richardson Mine.*)

The only mining engaged in during the year by this company was a small amount of stoping at the East Block property: 70 tons of ore being taken from what is known as No. 3 belt.

Subsequently to the closing of the mine a final clean-up was made of the mill plates and cyanide plant, resulting in the recovery of 1,502 ounces of gold which makes the total recovery of gold from the Richardson mine to date, 53,835 ounces from 395,731 tons of ore mined and milled. The bullion being valued (at $19.00 an ounce) $1,022,965 and being an average yield of $2.58 a ton.

Seal Harbour Leasing Company.
(Seal Harbour Mining Co., property).
Dan McAskill.....................manager.

During the year an average of 17 men has been employed.

Production.—From 5,190 tons of ore mined and milled, 1,741 ounces of gold were recovered.

In October, 1910, the present operators, the Seal Harbour Leasing Company, commenced work at this property, operating under lease from the Seal Harbour Mining Compay. Mining has been continued throughout the year.

Underground.—The underground work carried on by the present operators has consisted of the stoping of the ore from what is known as the Big Belt above the 100 feet level eastwardly, and following the upward course of the roll to the east side of the cross-cut from the east or prospecting shaft, and the taking out of a small test-crushing from the Slate Belt so-called.

The Big Belt so-called, is a continuation westwardly of the belt worked by the Beaver Hat Mining Company and is worked from cross-cuts from the shafts sunk on the Slate Belt about 35 feet to the north. The ore met is similar to that mined by the Beaver Hat Mining Company.

All ore is hoisted through the West shaft by gasoline hoist and trammed direct to the mill.

Surface.—General repairs have been made to the buildings and equipment. An annex has been built to the mill-building and the following equipment added during the year:—

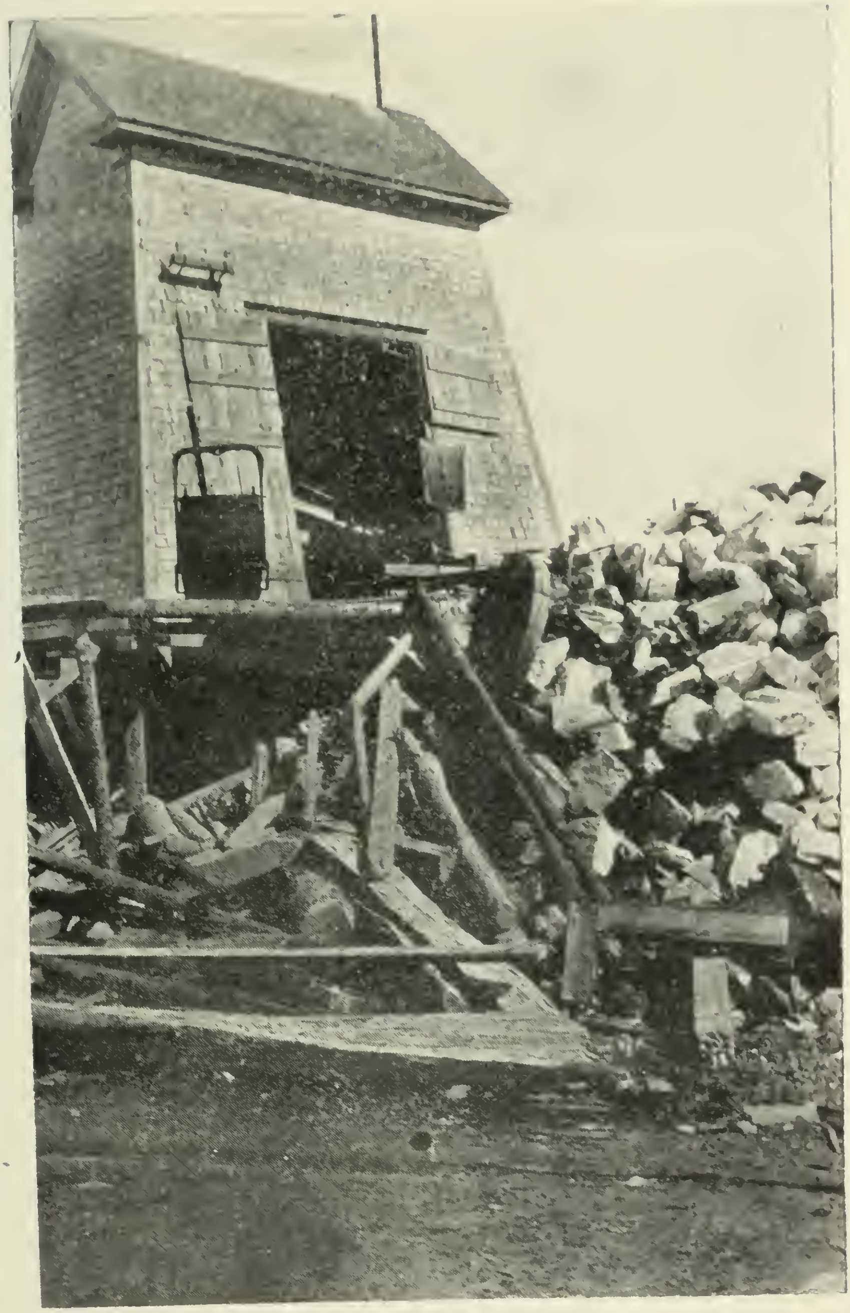
One 125 h. p. Fitchburg Engineering Co., corliss engine.

One 6 by 15 Sturtevant roll-jaw crusher.

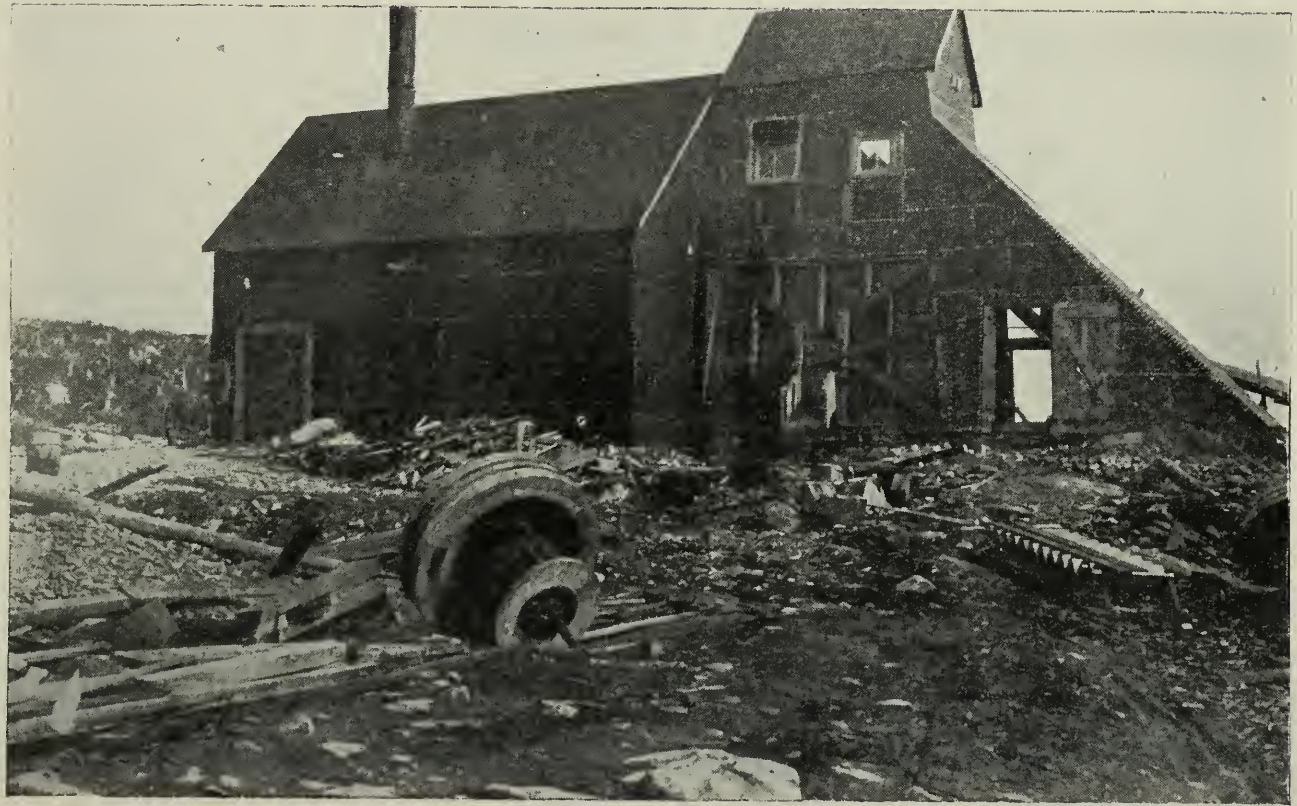
One water heater with feed pump.

Country Harbor.

During October and November a small amount of work was done at the Sydney Gold Mining Company's property in this district. A small boiler, a hoist and pump were placed at the main shaft. There were 28 tons of ore mined and crushed. Work was discontinued at the close of the year. An effort is now being made to re-open the property, and general repairs are being made to the surface equipment.



Seal Harbor Leasing Co., Goldboro, Shaft House on Slate Lead



Boston and Goldenville Gold Mining Co., Shiers Point, New Shaft and Power House

HALIFAX COUNTY.

Shiers Point.

Boston & Goldenville Gold Mining Company.	N. H. MacDonald................manager. J. H. MacDonald...underground manager.

During the year an average of 18 men has been employed.

Production.—As yet only one small crushing has been made, 14 tons yielding seven ounces of gold.

This company has taken over the property formerly known as the Moosehead Mine and on which the mill and other surface equipment was destroyed by fire, in 1900.

The present operators commenced work in August, 1910, but it was not until August 1911, that underground operations were undertaken and to date, little more has been done at the main shaft than to pump it out and make small repairs to ladder-way, and re-timber the collar of the shaft.

At the eastern part of the district, a shaft has been sunk 65 feet, and it is from this shaft that the ore noted above as being crushed, was taken.

The main shaft is down 200 feet, with drifts at the bottom, east 200 feet and west 200 feet. The belt opened by these workings averages four feet in width and contains about 20 inches of crushing material. There is considerable ore developed in the mine, which on account of the fire mentioned above was not removed.

At the western end of the district and on what is known as Snake Brook, a 10-stamp water-power mill has been erected, power being generated by a 16 inch "Little Giant" turbine wheel working under a 22 feet head. At the main works a shaft house, power-building, and blacksmith's shop have been constructed, and a 15 h. p. boiler set up. Near the mill, an office building has been erected.

Fifteen Mile Stream.

Fraser and McLeod.	Malcom G. McLeod..... ....manager.

Production.—From 242 tons of ore mined and crushed, 155 ounces of gold were recovered.

During the months of October, 1910, June and July, 1911, mining operations were carried on at the workings operated in the preceding year, and consisted of a continuation of the stoping done during that year. No new workings have been opened and no additions to equipment have been made. The operators were hampered by a scarcity of water to operate their milling equipment, and give this reason for the small amount of work done.

Beaver Dam.

Gladwin Mining Co.

E. H. Gladwin.... ....manager.
J. K. Pearson...........superintendent.

The average number of men employed was 15.

This company is operating what was formerly known as the Redding Mine.

Operations were commenced in August, 1910, and to date have been of a prospecting rather than a mining nature. No crushings other than for test purposes have yet been made.

Underground.—The Redding mine shaft so-called, has been sunk 53 feet and is now 68 feet deep. At the depth of 60 feet, levels have been started east and west, the east drift is in 23 feet, and the west drift is in 22 feet. At a depth of 30 feet a level has been driven west 20 feet. The belt opened by these workings is slate, five feet wide containing a quartz lead varying in width from 1 to 5 inches. The course of the belt is north 68 degrees west, and dips to the north at an angle of about 58 degrees.

On the surface, a bunk-house, a cook-house, and an office building, have been erected, and general repairs made to the mill building and shaft-house. No new equipment has been acquired.

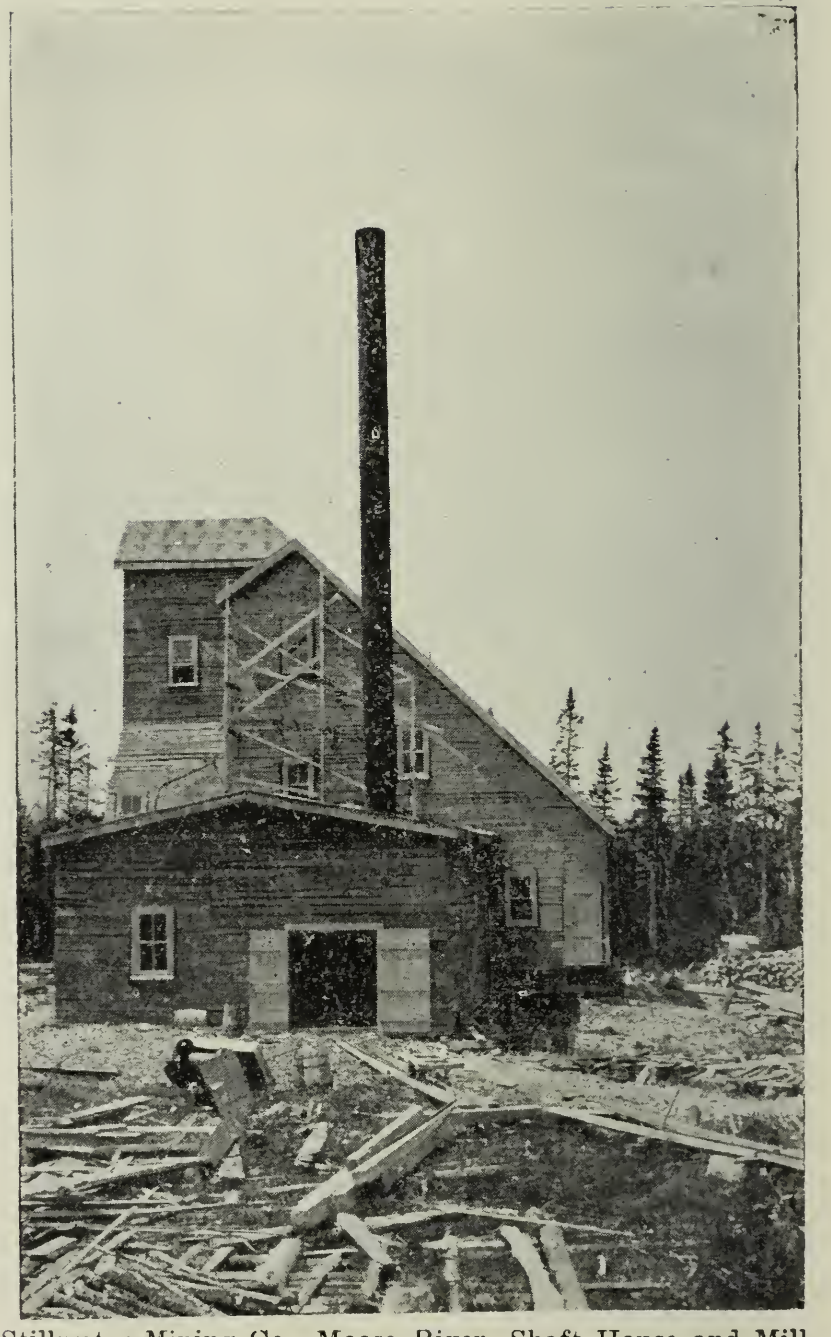
Caribou.

Caribou Gold Mines.

Harry Ross..................manager.
George Lawlor ....superintendent.

Average number of men employed, 18.

Production—From 754 tons of ore mined and crushed 850 ounces of gold were recovered.



Stillwater Mining Co., Moose River, Shaft House and Mill Building.

Underground—At the Flat Lead workings, so-called, a winze was sunk on the Bob Wright angular, from the 40 feet level to a depth below the level of 80 feet, measured on the incline of the winze, an angle of about 50 degrees; and in the eastern workings a small amount of ore has been stoped. The greater part of the mining carried on by this company, being however, from the Holman vertical shaft, and the Flat Lead workings for the time being have been abandoned.

At the Holman Shaft workings, the drift east on the Ross Lead has been extended 150 feet, and is now in a total distance of 200 feet. The ore from this lead and a small lead on the foot-wall of the Ross Lead belt has been stoped from the east drift south: the south limits of the stope extending from a point in this drift 75 feet east of the shaft, and to a point 65 feet south of the east face of the level. Of the gold recovered by this company during the year, by far the greater portion is from this stope. The south cross-cut from the Holman Shaft has been extended and is now in 200 feet. Connection is to be made between this cross-cut and the Bob Wright angular winze, from this cross-cut 100 feet south of the shaft, drifts have been put in east and west 25 feet each, and 195 feet south of the shaft, a drift has been put in east 35 feet.

I regret to report that a fatal accident took place at this mine resulting in the death of John W. Weeks, aged 16 years. Weeks, who was not employed at the mine, had gone below to see a chum, and on coming to the surface is suppose to have leaned over the collar of the shaft for the purpose of having a look around, when he lost his balance and fell to the bottom, a distance of 100 feet. Death was instantaneous.

No additional equipment or buildings have been added during the year.

Moose River.

Stillwater Mining Co.
H. W. Hersey .... manager.
George Murchy.......... superintendent.

An average of 16 men has been employed, during the year.

Production—From 408 tons of ore mined and crushed, 171 ounces of gold were recovered.

Underground—The shaft has been sunk 35 feet and is now 140 feet deep. At a depth of 130 feet, levels have been driven east 90 feet and west 64 feet. From the east drift, the ore has been stoped out, from the shaft to the face of the drift for a height above the drift of about 50 feet. Preparations for stoping have just been completed on the west drift. From the 130 feet level, 15 feet east of the shaft, a cross-cut has been started south. This was in at the end of the year, 14 feet, and shows a nine-inch lead at the face.

The belt in the new work shows the same general characteristics as the former workings above.

Surface—During the year a mill building, with power-house annex has been constructed and equipped with the following machinery:—

One 110 h. p. boiler.

One 35 h. p. engine (Jenckes.)

One Sentinel Compressor, 150 C. F. C.

Ten Truro Stamps with equipment, including automatic feeders.

One Blake Rock breaker.

One Cameron pump 2½ inch suction, 2 inch discharge.

One Murphy stoping drill.

One Rand No. 42 drill.

In addition to the mill and power-building, a blacksmiths' shop and store-house have been built.

OTHER WORK, MOOSE RIVER.

M. J. O'Brien discontinued prospecting at the Touquoy property early in the year. Before closing, an attempt was made with No. 2 Diamond drill to determine the strata at the anticline north of the Touqouy mine. It was found that a great deal of faulting had taken place, and much difficulty was met in getting the holes through this faulted structure. Three attempts were made and the work was discontinued.

Considerable tribute work has been carried on at different parts of the district, resulting in the recovery of 73 ounces of gold from 243 tons of material mined and crushed.

Tangier.

Dominion Leasing Co.	A. E. McPhail ....manager.
(Lessees of Dominion Mining Company).	D. M. Collingwood.........asst. manager.

Average number of men employed, 50.

Production—From 5,190 tons of ore mined and crushed, 1,741 ounces of gold were recovered.

Underground—Mining operations during the year were confined to the 500 feet levels east and west. The east level was extended 170 feet and is now in 270 feet. The west level was extended 32 feet and is now in 132 feet. The ore between this level, both east and west, and the 340 feet level above, has been stoped for a distance of about 90 feet above the level.

On August 8th a fire took place which totally destroyed the shaft and mine power-house, and since that date no underground operations have been carried on. Work was immediately commenced upon the construction of new buildings to replace the buildings destroyed, and a new motor and a compressor have been ordered.

The operators expect to have the buildings completed, the machinery placed, and re-commence mining by the latter part of December.

Two Imperial stoping drills were the only additions to equipment during the year.

I regret to report that a serious accident took place at this mine on May 27th resulting in serious injury to James Monk.

This man, James Monk, in company with his father and Allan Clattenburg, were timbering on the 340 feet level. They left the level and got into the skip at the 340 feet station, signaling the engineer to hoist them to the top. Just as the skip started, Edward Monk reached for the tape which was lying close to the skip, and in so doing he pushed his son over the edge of the skip, so that he was caught between the skip and the air pipe which crosses the hanging wall of the shaft at this station. James Monk's injuries consisted of dislocation of the right shoulder, and compound fracture of the arm.

Lake Catcha.

Petpeswick Mining Company.	G. J. Partington .... manager. Wm. McQuarrie.............. foreman.

Average number of men employed, 25.

Production—From 862 tons of ore crushed, 320 ounces of gold were recovered.

Mining operations were carried on by this company during the year with the exception of the months of February, March, and April.

Underground—The new Vertical shaft on the Lake Lead has been sunk during the year 130 feet, and is now 210 feet deep. The Lake Lead was encountered at a depth of 173 feet, and in the work so far done on it, shows the same general characteristics as in the other workings.

At a depth of 200 feet a level has been driven east 50 feet: no other underground work has been carried on during the year, but preparations are being made to re-open and commence mining at the Coleman shaft.

Surface—Considerable surface prospecting has been done by this company at different parts of the district.

The friction hoist formerly at the Coleman shaft has been moved to the Vertical shaft workings, and a Jenckes hoist (8 by 12) has been placed at the Coleman shaft workings. At the vertical shaft, a 50 h. p. boiler has been placed and a Cameron pump 7 by 3½ by 12, has been added to the equipment at the Coleman shaft. Two Rand No. 42 drills have been added to the general equipment.

Extensive repairs have been made to the mill and other surface buildings.

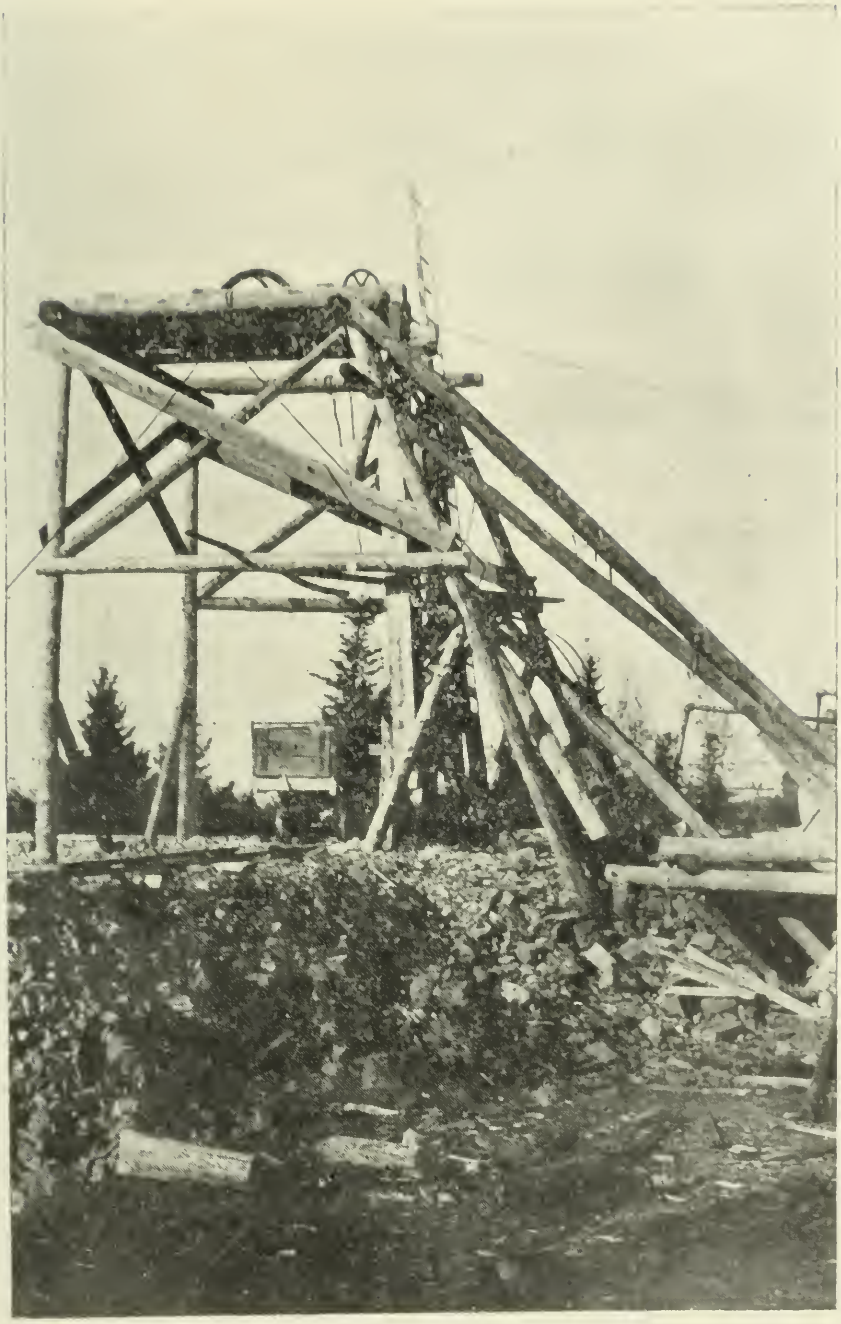
Oldham.

W. A. Brennan.	W. A. Brennan...................... manager. Patrick Mullaley................... foreman.

An average of 20 men has been employed.

Production—From 272 tons of ore mined and crushed, 154 ounces of gold were recovered.

As noted in last year's report work was discontinued at the main Stirling lead workings, and the 1200 feet level south was



Gallows frame and dumping arrangement. Sterling Barrel Lead.
W. A. Brennan, Oldham

extended in an effort to locate new ore-bodies. The level was extended 50 feet during the year, and a small quantity of ore stoped, satisfactory values were not met and the work has been abandoned.

South-west of the main workings and on the south leg of the Stirling barrel-lead, an 80 feet shaft was re-opened and sunk 120 feet, its depth now being 200 feet. At the bottom, levels were driven east 60 feet and west 40 feet. In the shaft-sinking at a depth of 160 feet a fault was encountered, pitching to the east at an angle of 45 degrees, which at the bottom workings causes a throw of about 40 feet to the south going east. The Stirling lead as encountered in this work shows the same general characteristics as in the main working, but the values recovered were unsatisfactory, and the work is to be discontinued.

The equipment used at the new work during the year is part of that formerly used at the main Stirling lead, and the Shaffer barrel-lead workings.

Preparations are now being made to re-open the Frankfort lead.

TRIBUTORS.

Production—From 124 tons of ore mined and crushed 125 ounces of gold were recovered.

Alex. Greenough has continued work on the Broussard lead angulars, at the western section of the district, he has to date, sunk five shafts ranging in depth from 15 to 70 feet, and has stoped the belt of angulars encountered, from the bottom of these shafts to the surface, and 225 feet along the belt.

Other tributors in the district were Henry M. Reeves, John Morrison and Henry McDonald.

LUNENBURG COUNTY.

Gold River.

Uniac Mines & Power Company.	Robt. C. Stewart . . . . manager
	John Lacey . . . . foreman

An average of 8 men has been employed.

Production—From 49 tons of quartz mined and crushed 45 ounces of gold were recovered.

This company, early in the year, took over the Chester Basin Gold Syndicate property, and have operated part of the property on a small scale. No work was carried on at the Vermilion or Lacey lead workings so-called.

The winze of the Chester Basin Gold Syndicate main works was sunk 12 feet, and a small amount of ore stoped, immediately east and west, and above this winze. A small amount of work was also done on several of the leads immediately north of the mill.

No additional equipment of any kind has been added during the year.

QUEENS COUNTY.

Molega Barrens.

A. R. Peacock W. F. Fancy..........................manager.

An average number of 16 men was employed.

Production.—From 233 tons of ore crushed, 69 ounces of gold were recovered.

In August, 1910, work was commenced in this district, by Mr. W. F. Fancy acting on behalf of Mr. A. R. Peacock. The work done was all of a prospecting nature.

On the Nelson lead on area number 484, block 5, a shaft was sunk 115 feet, and at a depth of 100 feet a level was driven east 100 feet, at a depth of 50 feet, small blocks of ore were stoped from the east and west ends of the shaft, 100 feet east of this shaft a surface pit was sunk 15 feet in the rock.

The Nelson lead, where opened up by this work, averages 12 inches of quartz, its course is north 50 degrees east, and it dips to the south at an angle of 60 degrees. The belt accompanying the lead is composed of slate and is 30 inches wide, with quartzite walls. The quartz is light in colour and shows little mineral. Tests taken from the above work did not give satisfactory values, and the work was abandoned.

On area 525, a vertical shaft was sunk to a depth of 115 feet on the axis of the anticlinal fold, and at a depth of 100 feet a cross-cut was driven north 40 feet and south 113 feet. A number of leads were cut by this work, which at places showed considerable free gold, but mill tests taken did not give satisfactory results and this work was also abandoned.

In addition to the shaft-work, test pits were put down in several places and considerable surface trenching was done.

Surface.—On the surface, temporary shaft-houses and blacksmith's shop were constructed at the Nelson and Vertical Shafts; and at the Vertical Shaft one 30 h. p. boiler, one 15 h. p. hoist, 2 steam drills, and one 4 by 6 by 4 duplex pump, were placed and used. These were brought from a Cobalt property owned by the operators. At the Nelson lead, hand-steel and horse and whin were used. The test crushings from both the Nelson and Vertical Shaft works were made at the Ponhook Mining Company's mill.

On August 25th, work was discontinued and the option on the property given up.

Fifteen Mile Brook.

H. C. Borden, et al. E. Percy Brown..................manager.
(*Low Mine*).

Production.—250 tons of ore were crushed yielding 25 ounces of gold.

This property was closed early in November, 1910: the only work done being the taking and crushing of the last of a series of test crushings from and above the 75 feet level.

YARMOUTH COUNTY.

Carleton and Kemptville.

At Carleton, the United Finance Company operated their property for a short time, producing 36 ounces of gold from 48 tons of material crushed. They report that they lost the lead in the old shaft and that they have only recently re-located it with a new shaft. Operations have been suspended, but they expect to shortly re-commence work.

At Kemptville, Mr. E. F. Walton recovered 16 ounces of gold from tribute work on the Kemptville Gold Mining Cos., property.

HANTS COUNTY.

Renfrew.

M. J. O'Brien.

M. R. O'Shaugnessy............manager.
B. C. Crowe......................foreman.

An average of 40 men has been employed.

Production.—From 3,493 tons of ore mined and crushed, 1,527 ounces of gold were recovered.

Operations during the year were confined to the McLeod or Nuggety Lead workings.

Underground.—The McLeod shaft was sunk 88 feet and is now 475 feet deep. The shaft from the surface to the 360 feet level was lengthened and a new skip-road put in, from the surface to the bottom of the shaft. At a depth of 450 feet, levels have been driven east 68 feet and west 48 feet. The 360 feet level east has been extended 43 feet, and this level west has been extended 160 feet. These levels are now in 183 feet and 260 feet respectively. Stoping has been carried on above the 260 feet levels east and west, and above the 460 feet levels east and west.

Surface—On the surface, a new shaft-house has been built, and the hoist formerly at the Empress shaft has been placed: this hoist operates the new skip, the old hoist being used to operate the tub.

The only new equipment added during the year was two Rand hammer drills, one Rand No. 42 piston drill; one Hardy piston drill, and one Murphy hammer drill.

At the Simm lead workings, other than the taking out of a small test crushing no underground work has been done.

Considerable surface prospecting has been carried on in the vicinity of the Maria Walker lead workings.

VICTORIA COUNTY.

Middle River.

Great Bras d'Or Gold Mining Company.

D. Patriquin............ superintendent.

An average of 5 men has been employed.

Production—From 125 tons of ore mined and crushed, 23 ounces of gold were recovered.

The work carried on during the year was all of a prospecting nature, and consisted of the driving of levels on the Lizard and other leads north of the fault, and the taking out of several test crushings. On the Lizard lead, north of the fault, an uprise has been started to connect the intermediate level with the working or No. 1 level.

The shaft was sunk an additional 40 feet, and is now down 140 feet. Work at the shaft has been discontinued for some months.

An effort was made in September to resume active mining operations, but owning to lack of men little was done. As the time of my visit the company were still endeavouring to get miners and will start operations just as soon as a sufficient number can be procured.

Other Districts.

At Mooselands, Tangier, E. E. Fraser et al, have during the summer months carried on work on a lead located west of the E. E. Fraser mill and about 200 feet west of the main Mooseland road. Only one crushing was made during the year: this gave 4 ounces 17 dwt. of gold from 12 tons of material crushed.

At Moutague, T. N. Baker, mined and crushed from various places on the Golden Group property, 41 tons of ore which yielded 24 ounces of gold.

At Caribou, Albert Logan and associates mined and crushed at the Touquoy Mill, Moose River, 17 tons of ore from their property which is situated north-west of the Holman workings. They recovered 18 ounces of gold.

IRON.

The Canada Iron Corporation produced 53,595 tons of ore during the year, and this was the only iron ore mined in the province. All ore used by the Nova Scotia Steel & Coal Co., and the Dominion Iron & Steel Co., a total of 853,904 tons was imported, and of this ore 831,660 tons came from Newfoundland, 15,734 tons came from the United States, and 6,509 came from Europe.

Torbrooke.

The Canada Iron Corporation Company, Limited.	D. L. McLeod	superintendent.
	S. M. Archibald J. M. Hopkins N. Ackles	foreman.

From October 1st to August 1st, an average of 90 men was employed.

Production—During the year 53,595 tons of ore were mined, which with the exception of 200 tons shipped, and 357 tons sent to the concentrator, remains on the stock pile at the mine. The total amount of ore on hand at Torbrooke and Port Wade is now in round figures 110,000 tons.

In August, on account of the dull condition of the Iron ore market, operations were suspended, and mining is not to be resumed until the Spring or until such time as the market conditions warrant it. The ore mined during the year, was taken from the stopes above levels number one east and west, two, east and west, three, east and west, and four and five west, and from level extensions.

A modern concentrating plant has been erected by this company at Nictaux.

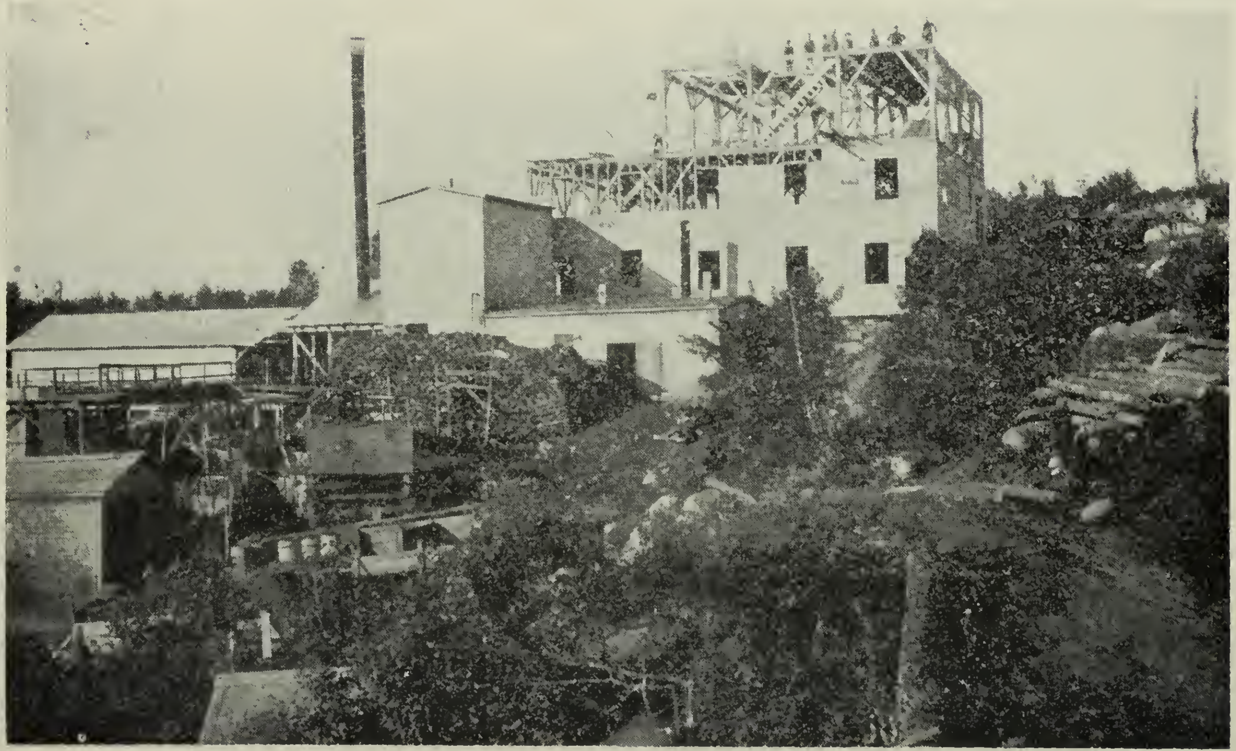
Arisaig.

At the Arisaig district, prospecting was discontinued in the Fall of 1910, and to date has not been resumed.

AURIFEROUS ANTIMONY.

WEST GORE.

No mining was carried on in connection with this mineral. The mill of the West Gore Antimony Company, at West Gore, was operated part of the year treating 2,004 tons of dump from which 191 tons of concentrate were recovered and shipped to the St. Helen's Smelting Company, Swansea, Wales. The operators expect to re-open their mine during the coming year.



Nova Scotia Manganese Co , New Ross, Showing New Power House and Mill Building under Construction

COPPER.

With the exception of scattered prospecting, no work has been carried on in connection with this branch of the mining industry during the year.

LEAD-SILVER.

At the Dunbrack property at Musquodoboit, an average of nine men was employed on surface prospecting.

No mining was carried on.

MANGANESE.

New Ross.

The Nova Scotia Manganese Company.	W. J. Prisk........................	manager.
	Robert Turner...............	foreman.

An average of 20 men was employed, on all work during the year.

This company which was organized and commenced work in 1910, have been actively engaged in mine development, and in the erection of surface buildings and placing of equipment.

Underground.—The main shaft has been sunk 55 feet and is now 155 feet deep, levels have been driven east and west at the bottom, 25 feet and 155 feet respectively. The ore opened up by this work shows improvement over that encountered in the workings of 1910. The average width of the vein in the west drift, measured in the roof and floor of the drift is 17 inches, it varying from 1 to 42 inches.

The shaft has been retimbered : a permanent station made at the bottom, and preparations made to commence stoping from the west level. Underground work has been discontinued for the time being, and will be resumed upon the completion of the surface equipment.

Surface.—Immediately west of and adjoining the shaft-house a mill building 66 feet by 54 feet, five storeys, has been constructed and to the rear of the mill building, a power-house 30 feet by 30 feet has been built; and to the rear of this a building 30 feet by 58 feet has been constructed, which is at present used as a saw-mill. A short distance north of and facing the mill building, an office building 13 feet by 25 feet has been built. These with a store-house and stable constitute the buildings put up during the year.

At the power-house one 80 h. p. Robb boiler, and one 50 h. p. engine have been placed. The saw-mill building is equipped with one Lloyd's saw-mill and one Lloyd's shingle-mill. No additional mining equipment has as yet been added, and no machinery has yet been placed in the mill.

High grade Pyrolusite, such as the product of this mine, is used by glass-makers, paint-makers, steel-makers, electrical equipment makers, and manufacturing chemists. The poor grades or run-of-mine product being taken by the steel makers and the highest grade or what is known as air-float product, being taken by the manufacturing chemists.

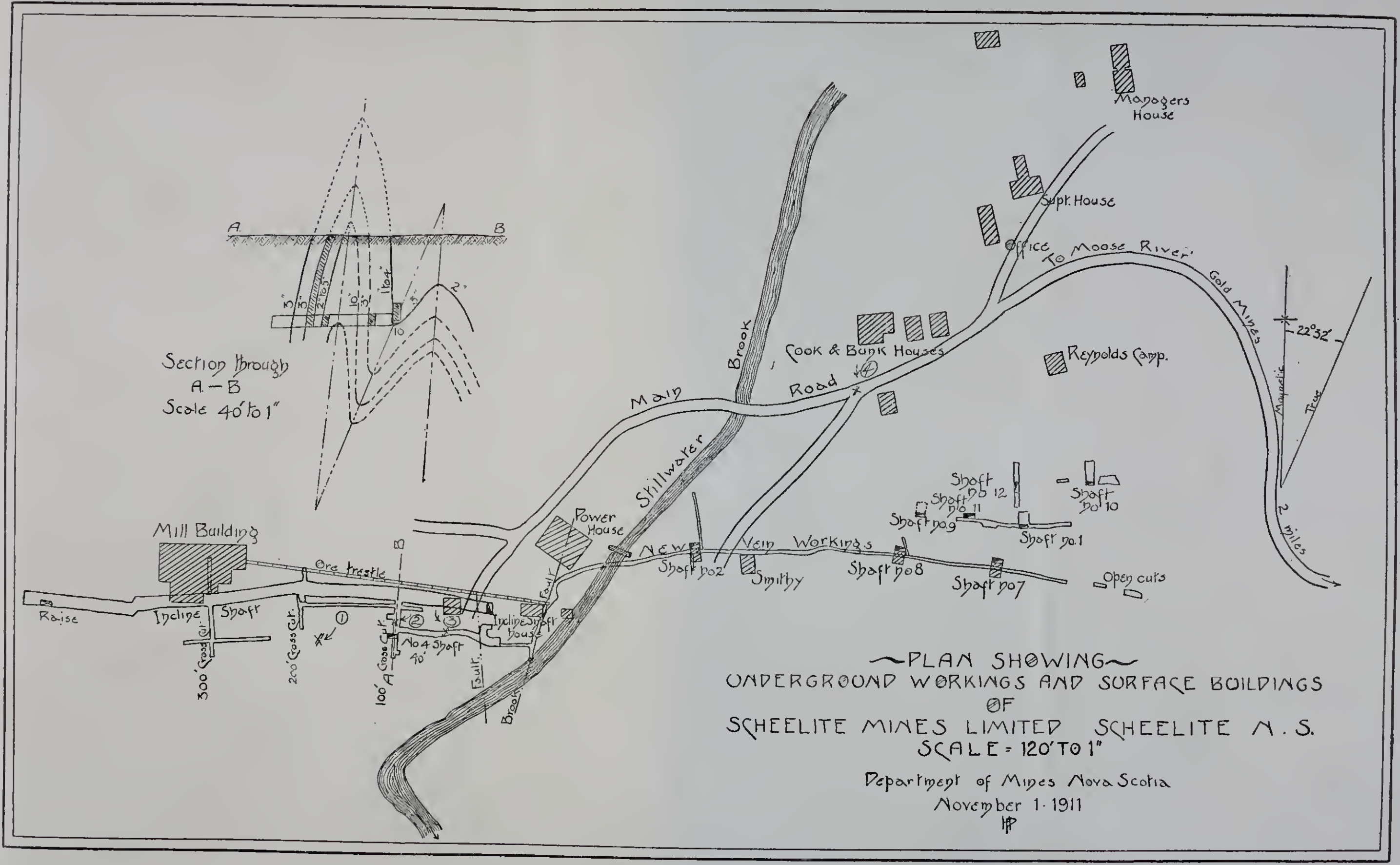
Test shipments of ore have been made to several places in the province where high grade Manganese ore is used, and to numerous places in the United States, Upper Canada, and Great Britain. The operators state that reports so far received are most satisfactory.

A new road is to be built from the mine to Falmouth, a distance of about 12 miles. This will make the haul less than half that to Chester Basin and the grades of the new road will be very much less than the grades on the Chester Basin road.

The company have on hand, at the present time, 200 tons of ore, part of which is ready for immediate shipment. It is expected that shipments will commence early in 1912.

TIN.

The prospecting for this mineral at the New Ross district, carried on by A. L. McCallum, et al, during the summer of 1910, was continued during the spring and early summer. Additional prospect shafts were sunk and considerable surface trenching done. Tin ore in economic quantitles was not met and the work has been discontinued.



~PLAN SHOWING~

UNDERGROUND WORKINGS AND SURFACE BUILDINGS

OF

SCHEELITE MINES LIMITED SCHEELITE N. S.

SCALE = 120' TO 1"

Department of Mines Nova Scotia

November 1 · 1911

HP

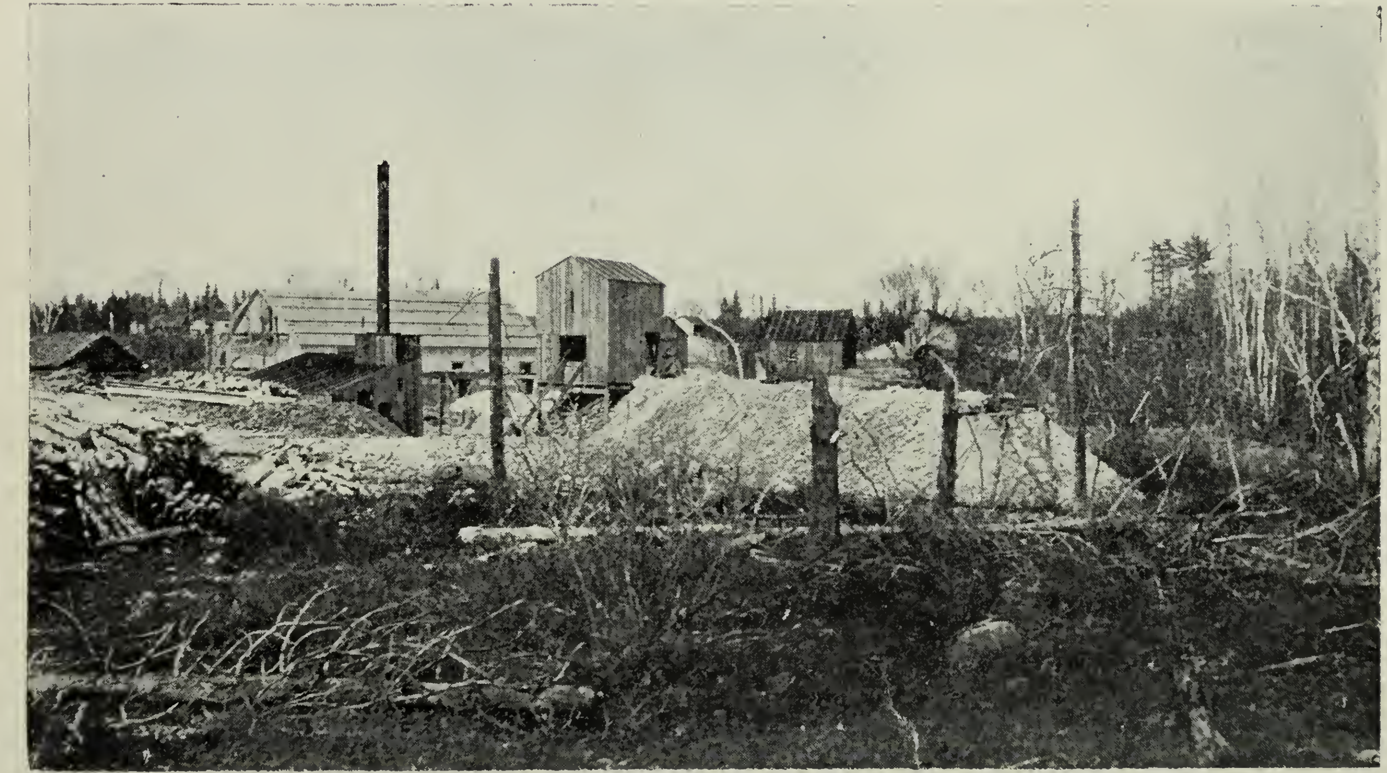


Photo No. 1

Scheelite Mines, Ltd., Scheelite, Moose River. Looking North East Showing Incline-Shaft House and Power Building

TUNGSTEN.

Scheelite, Moose River.

Scheelite Mines Limited.
Victor G. Hills......................manager.
H. J. McAskill.......... ....foreman.

Average number of men employed on all work, mine development prospecting, surface and construction, 34.

This property is that formerly owned by John A. Reynolds and Silver Curry and was taken over by the Scheelite Mines, Ltd., early in the spring.

Mine development, prospecting and construction work have been actively engaged in during the year, and with the new buildings lately erected, the camp presents a very business-like appearance.

Mining and Prospecting.—Three new shafts have been sunk, designated 10, 11, and 12, and making the total number of shafts sunk to date, 13. Shaft number 10 is 18 feet deep, shaft number 11 is 15 feet deep and shaft number 12 is 48 feet deep. These shafts were put down north of shaft number 7 and were for prospecting purposes.

The incline shaft has been sunk 360 feet during the year, and is now 480 feet deep. Cross-cuts have been driven at 100, 200 and 300 feet, both north and south, with the exception of the 100 feet cross-cut which has only been driven south. These cross-cuts are now in as follows, the 100 feet, south, 52 feet, the 200 feet, south 40 feet and north, 43 feet, the 300 feet, south 125 feet and north 85 feet.

Levels from these cross-cuts, at the close of the year, were in as follows:—100 feet cross-cut, number 1 level, east 25 feet, west 100 feet; number 2 level west, 15 feet; number 3 level east 110 feet; number 4 level west, 10 feet; and number 5 level east, 8 feet. 200 feet cross-cut, no drifts: 300 feet cross-cut, level number 1 east 60 feet, and west 30 feet.

Shafts number 2, 7 and 8 have not been extended during the year: the levels however, have been extended and connection made between the different workings, and the west level from number 2 shaft has been driven west to the Brook fault, a distance of 140 feet from the shaft, and the level continued along this fault in a southerly direction, encountering the vein in the west wall of the level, 65 feet south of where the fault was encountered. The level has been extended west of the fault on the vein, 25 feet, and connection is to be made by a raise from this level with the number 3 level, from the 100 feet cross-cut, above.

From number 2 shaft, at a depth of 28 feet, a cross-cut has been driven south 48 feet, and north 68 feet: at a depth of 28 feet, a cross-cut has been driven south 15 feet. From number 8 shaft at a depth of 48 feet, a cross-cut has been driven north 18 feet.

From number 10 shaft at a depth of 18 feet, a cross-cut has been driven north 22 feet, and from number 12 shaft at a depth of 35 feet, cross-cuts have been driven north 28 feet, and south 20 feet.

From the 300 feet cross-cut 110 feet south of the shaft, a raise of 30 feet has been made, and at the 200 feet cross-cut 10 feet south of the level, a raise of six feet has been made, connecting this cross-cut with the west extension of number 1 level from the 100 feet cross-cut.

Continuous drifts now exist on what has been termed the new vein, for a total distance of 652 feet, or from a point 77 feet east of the number 8 shaft to the 100 feet cross-cut; and drifts of 30 feet and 60 feet have been driven on what is taken to be the same lead from the 200 feet cross-cut south, making a total of 742 feet of drifting on the new vein, after deducting the level of the drift along the Brook fault.

The ore encountered in the new work during the year, as to size and quality, shows improvement over that met in the work of 1910.

The accompanying photograph, taken on May 18th, 1911, at the face of number 3 drift east from the 100 feet cross-cut (marked X on accompanying plan) is of one of the particularly good bodies of ore encountered.

Surface—The road from Moose River to Scheelite has received considerable attention, and is now in very good condition for teaming purposes.

A short distance north-east of the incline shaft, a main power-house 36 by 48 feet has been built and equipped with two 90 h. p. Canada Foundry Co., boilers, one straight-line Rand compressor 585 C. F. C.

To the rear of and about 300 feet west of the inclines shaft, a mill building has been constructed, and the equipment is now being placed. At the incline shaft the hoist-house has been rebuilt, and moved east of the shaft-house. The shaft-house has been altered and a sorting room added at the east end, in which have been placed one set of Grizzlies and a sorting table.

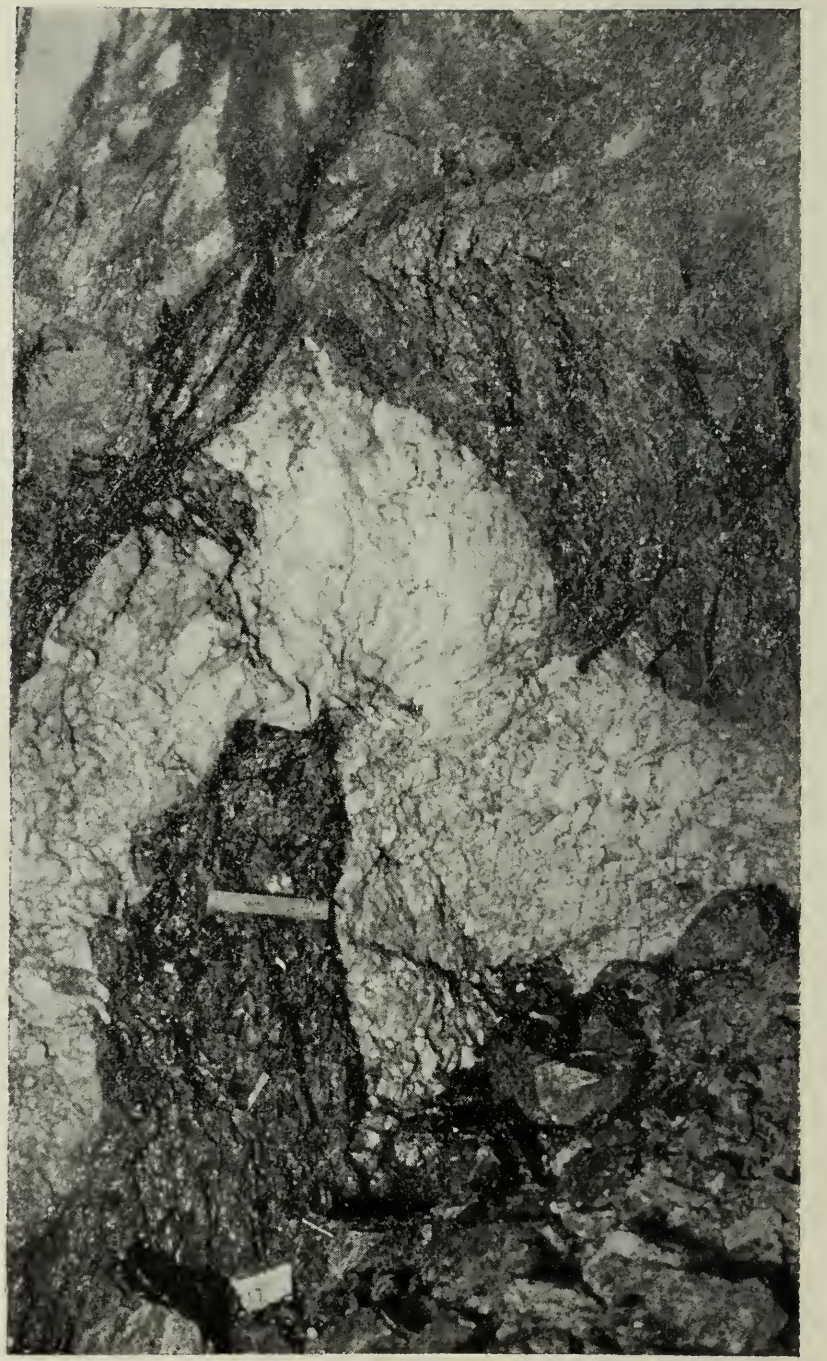


Photo No. 2

Scheelite Mines, Ltd., Scheelite, showing apex of anticlinal fold

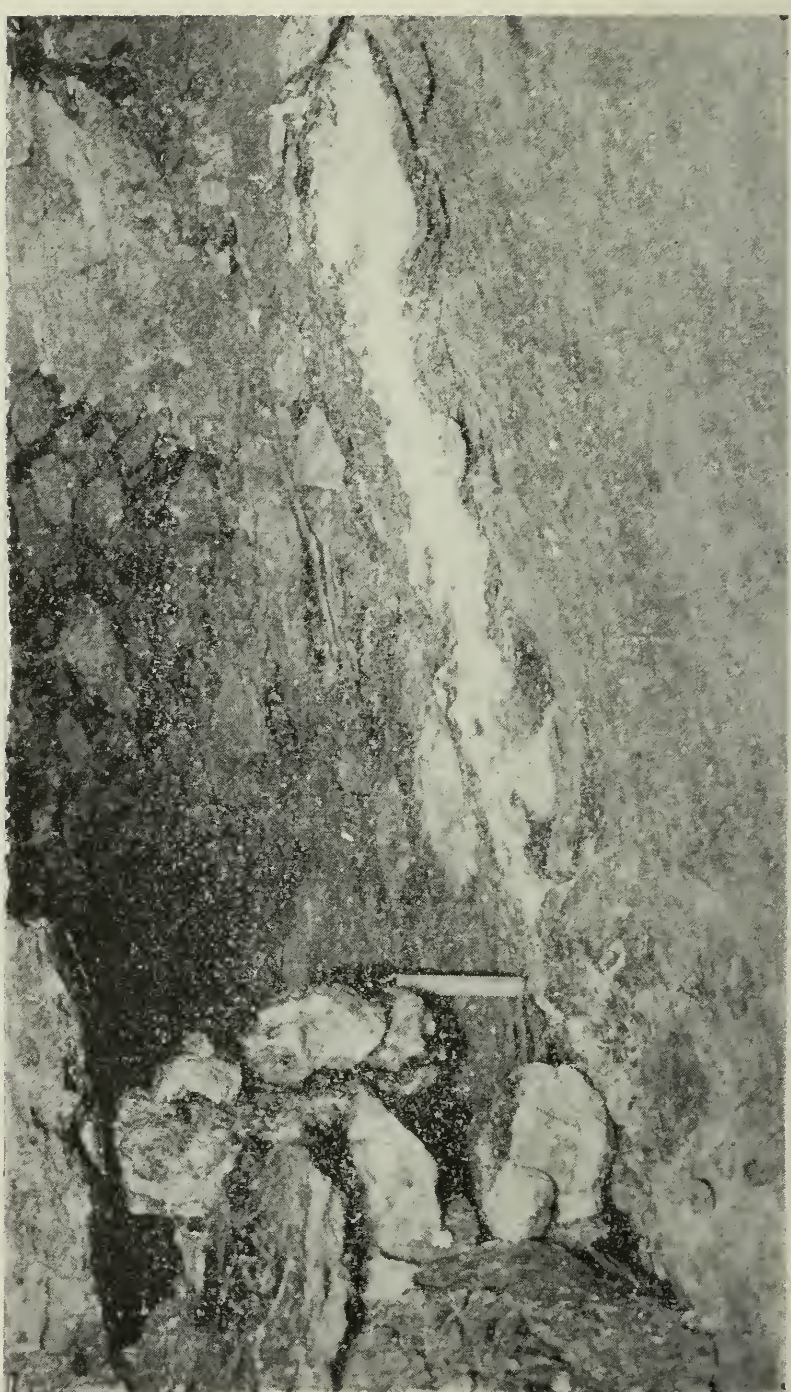


Photo No. 3

Scheelite Mines, Ltd., Scheelite. New Vein so-called, scale shown is six inches long.

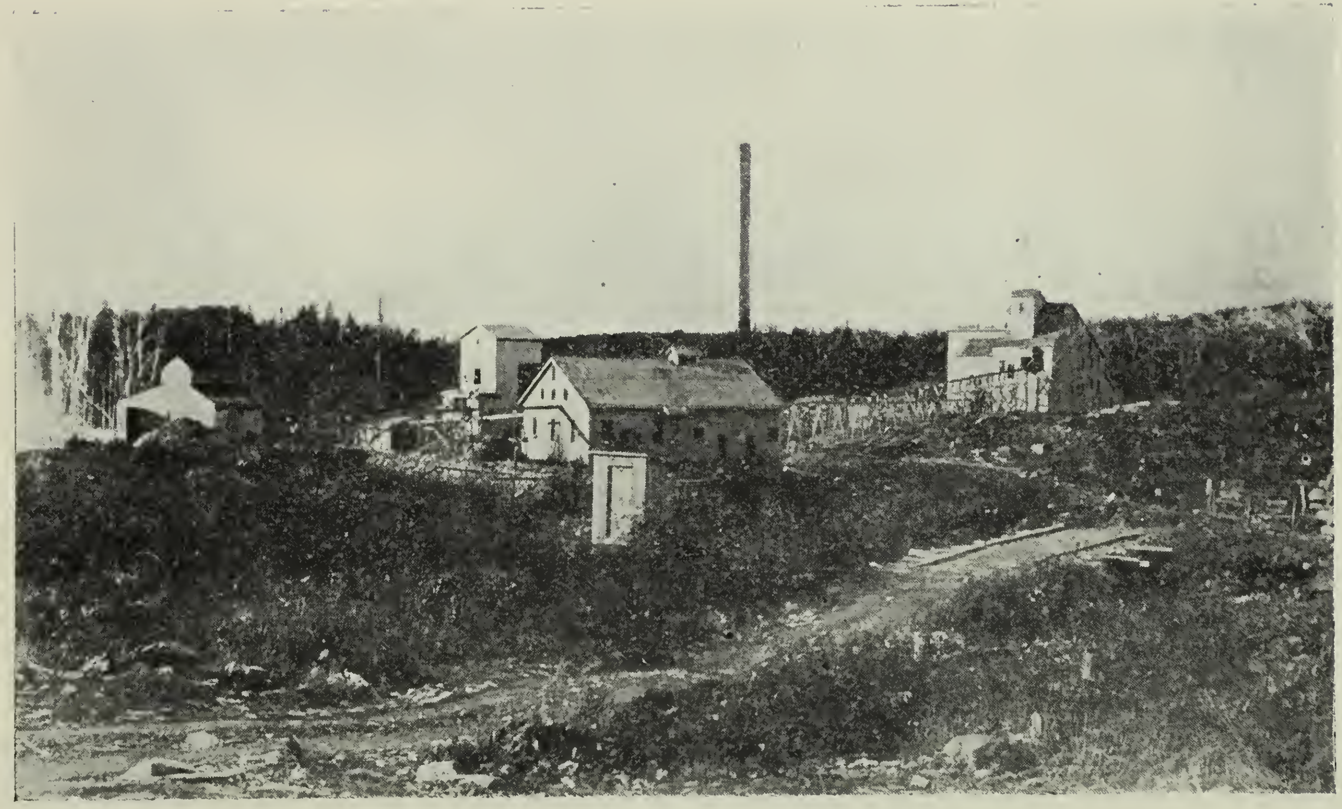


Photo No. 4

Scheelite Mines, Ltd., Scheelite, Moose River. Looking South West from Cook House

The proposed mill practice is as follows:—

The ore from the mine will be dumped over grizzlies at the shaft-house, the fines going to bin, and the coarse going to sorting table where it will be hand-picked, the ore going to bin, and the waste rock to dump. From the sorting-room ore-bin, the ore will be hoisted up incline trestle to ore-bin at mill building, the fines passing through one-half inch grizzly, coarse passing through Dodge crusher set to one-half inch and both products passing through chute to bucket elevators and to main storage bin of 120 tons capacity; being sampled before entering bin by Snyder automatic samplers. From the bin shaker, ore goes to combined sink conveyor and screen, to two Fraser and Chalmers rolls, 8 by 24, product crushed wet. The product from the rolls goes by elevator No. 2 to trommel, over-size returning to the rolls, and fines going to three cone sizes and from there to two slow-current Spitzkastens, distributing to four Wilfley tables and one Deister slime-table. Concentrates from the tables going to double drainage boxes and thence to a 36 feet by 5 feet steel drying table. From the drying table the concentrates go by elevator No. 3 to roaster hopper and Wilfley revolving roaster and from here to Ding electric magnetic separator, from which Tungsten concentrates are bagged.

The mill equipment is operated by two Robb engines of 50 h.p. 30 h. p. respectively. Power for these engines is generated at the power-house and is supplied by a 4 inch steam main. The 50 h.p. engine operates the crushing department of the mill and the 30 h. p. engine operates the concentrating department of the mill. A small dynamo has been placed which will supply light for the mill, and power for the Ding electric magnetic separator.

The capacity of the mill is 30 tons of ore per 24 hours, and it is expected that it will be ready for operation by December 15th.

In addition to the mill and power-house several small buildings have been erected including two bunk-houses and one miner's cottage. The machinery added during the year in addition to that placed in the mill and power buildings, consisted of five Murphy hammer drills and five Holman piston drills.

In addition to the underground work and equipment built and placed during the year, considerable surface prospecting has been done.

The operators expect to be ready to make shipments of ore early in January, 1912.

I remain,
Your obedient servant,
H. B. PICKINGS,
Deputy Inspector of Mines.

GOVERNMENT DRILLS.

Hiram Donkin, Esq., C. E.,

Deputy Commissioner and Inspector of Mines.

Sir:—I have the honour to submit to you my report on boring by Government core drills, for the year ended September 30th, 1911.

The amount of boring done during the year was not quite as much as the amount done during the year ended September 30th, 1910. There were 14 holes put down, making the total number of feet bored 4,618 feet, 8 inches, decrease of one hole and 602 feet, 11 inch when compared with the boring of the previous year. Of the holes put down 10, or 3,134 feet 4 inches bored, were by Diamond drills, and four or 1,484 feet, 4 inch bored, were by Calyx drills.

Several holes had to be abandoned on account of caving, but no holes were lost, and the holes abandoned were in very badly faulted structure.

The expenditure by the department, during the year, for maintenace of drills and store-house, repairs, wages, etc., was $3,283.38 and was $501.15 less than the amount expended during 1909-10.

The expenditure in detail was as follows:—

Drill number 1	$451.85
Drill number 2	568.83
Drill number 3	255.37
Drill number 5	628.81
Drill number 6	218.50
Drill number 7	137.55
Store-house and general expenses	1,032.37
Total	3,283.38

This year's expenditure brings the total expenditure on drills to date to $78,433.38.

The average costs a foot for all boring was $1.28, an increase of $0.29 over the average cost last year.

The carbon cost a foot for boring by Diamond Drills was $0.096 and the shot cost a foot for boring by Calyx drills was $0.046 a foot.

Boring costs, compared with the cost of 1909-10 show as follows:—

	1910	1911		
Cost a foot for all boring............	$0.99	$1.28	increase	$0.29
Cost a foot for all boring by Diamond drills.....................	0.93	1.30	increase	0.37
Cost a foot for all boring by Calyx drills..............................	1.44	1.25	decrease	0.19
Shot cost a foot for boring by Calyx drills.........................	0.02	0.046	increase	0.026
Carbon cost a foot for boring by Diamond drills.....................	0.067	0.096	increase	0.029

The above shows four increases and one decrease: but considering the conditions of strata encountered, the costs of the year are very satisfactory.

Number 1 drill throughout the year was engaged in boring for the Acadia Coal Company, and was worked almost continually in very badly faulted strata : several of the holes had to be reamed and cased, in some cases several times. That no holes were lost, and that costs with this drill remained as low as they did, reflects great credit upon Archie Hayman the operator.

The amount of boring done by Drills numbers 2 and 7 in any one locality was so small that the fixed charges made very high costs per foot.

The usual summary statement, and records of each hole put down are given on the following pages.

Summary Statement of the Year's Work.

Drill No.	LOCATION	No. of Hole.	Depth Bored		Total for Locality		Total for Drill	
			Feet.	Inches.	Feet.	Inches.	Feet.	Inches.
1	In vicinity of Stellarton, Pictou County	1	132	0				
1	" " " "	2	705	9				
1	" " " "	3	284	7				
1	" " " "	4	307	0				
1	" " " "	5	621	6				
1	" " " "	6	681	10	2732	8	2732	8
2	Moose River Gold Mines, Halifax County	1	14	2				
2	" " " "	2	11	6				
2	" " " "	3	16	0	41	8	41	8
3	Maccan, Cumberland County	5	360	0	360	0	360	0
5	Big Marsh, Antigonish County	2	827	6				
5	" " " "	3	500	6	1328	0	1328	0
7	Wentworth Centre, Cumberland County	3	94	10	94	10		4
7	McLellan's Brook, Pictou County	1	61	6	61	6	156	6
4	Remained at Storehouse, Hantsport							
4	Remained at Storehouse, Hantsport							
	Total boring during year						4618	8

Drill No. 1.

Steam diamond, producing 2 inch core.

STELLARTON PICTOU COUNTY.

NUMBER ONE HOLE.

Location—At Lourdes on property of Samuel Muir, and 125 feet west of W. T. Campbell's house and 500 feet north of Jones Brook.

Hole put down for Acadia Coal Company.

Mineral sought—Coal.

Dip of strata—North-east, 24° to 8°.

Fastest rate of boring—4 feet in one hour.

Average rate of boring—1.13 feet in one hour.

Commenced boring September 6th 1910. Finished hole October 13th 1910. Boring single shift.

This hole was bored to a depth of 303 feet 9 inches during fiscal year ended September 30th, 1910.

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface	Soil and gravel	23	4		
Shale	Gray, soft	15	10	39	2
Shale	Black	12	11	52	1
Sandstone	Gray, hard	5	11	58	0
Shale	Gray	19	8	77	8
Sandstone	Gray, hard, banded, with bands of ironstone	14	1	91	9
Shale	Gray	24	10	116	7
Shale	Gray, banded, with bands of ironstone.	5	9	122	4
Shale	Gray, dark	24	11	147	3
Shale	Gray, hard, banded	22	9	170	0
Shale	Gray, dark	72	6	242	6
Sandstone	Gray, hard, banded	36	3	278	9
Shale	Gray,	18	0	296	9
Shale	Gray, hard	7	0	303	9
Shale	Gray, dark	68	11	371	10
Shale	Gray, banded	26	5	398	3
Shale	Gray, dark	1	0	399	3
Coal	Ford seam	32	2	431	5
Coal & Shale	Mixed	3	2	434	7
Shale	Gray	1	2	435	9

This hole cost $438.63 or $1.00 a foot made up as follows :

Labor	$ 69 30
Management	227 75
Fuel, coal	26 00
Light, oil, waste, etc	2 10
Carbon wear	61 00
Material used in housing, boxes, etc	8 25
Freight	16 90
Blank bits, core lifters, core shells	18 28
Miscellaneous expenses	9 05
Total	$438 63

NUMBER TWO HOLE.

Location—Situate on the south side of Duff's Brook and on property of Christy Duff, 260 feet south-east of the Westville road and 636 feet north-east of bore-hole Number One.

Hole put down for Acadia Coal Company.

Mineral Sought—Coal.

Dip of Strata—North-east, 43° to 24°.

Fastest rate of boring—3 feet, 3 inches in one hour.

Average rate of boring—1 foot in one hour.

Commenced boring October 25th 1910, finished hole December 1st, 1910.

Boring October 25th to October 28th, single shift, remainder, double shift.

Name of Rock	Color and other General Characteristics.	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface	Soil and Clay	13	0	....	....
Shale	Gray, banded	19	4	32	4
Sandstone	Gray, hard banded	27	6	59	10
Shale	Gray, banded	35	4	95	2
Shale	Gray dark	41	4	136	6
Sandstone	Gray, hard banded	8	6	145	0
Shale	Gray, banded, with band of ironstone	53	6	198	6

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Sandstone	Gray, hard banded, with bands of ironstone	18	8	217	2
Shale	Gray, banded with bands of ironstone	25	10	243	0
Shale	Gray dark	41	10	284	10
Sandstone	Gray, hard, banded, with bands of ironstone	15	9	300	7
Shale	Gray, banded, with bands of ironstone	57	5	358	0
Shale	Black	10	2	368	2
Sandstone	Gray, hard	5	2	373	4
Shale	Gray dark	2	0	375	4
Sandstone	Gray banded	23	4	398	8
Sandstone	Gray banded, with bands of ironstone	17	7	416	3
Shale	Gray banded, with bands of ironstone	13	2	429	5
Shale	Black	4	7	434	0
Shale	Gray banded with bands of ironstone	21	3	455	3
Sandstone	Gray, hard banded	15	7	470	10
Shale	Gray and black	71	3	542	1
Sandstone	Gray, banded with bands of ironstone	10	9	552	10
Shale	Gray, hard	26	0	578	10
Shale	Gray, dark, banded	61	5	640	3
Shale	Gray, banded, with bands of ironstone	34	2	674	5
Shale	Black	1	8	676	1
Coal	Ford Seam	29	2	705	3
Coal and Black Slate		0	6	705	9

This hole cost $493.61 or $0.70 a foot made up as follows :—

Labor	$105 00
Management	256 40
Fuel, (Coal)	20 00
Light, oil, waste, etc.	4 06
Carbon wear	63 00
Material used in housing, etc.	2 50
Freight	8 30
Bits, core-lifters and core-shells	27 40
Miscellaneous expenses	6 95
Total	$493 61

NUMBER 3 HOLE.

Location—Situated on the west side of the north branch of Coal Brook and 416 feet north of where the brook crosses the Westville road, and about a mile west of bore-hole No. 2.

Hole put down for Acadia Coal Company.

Mineral sought—Coal.

Dip of strata—North-east, 5° to 82°.

Fastest rate of boring—3 feet 3 inches in one hour.

Average rate of boring—.95 of one foot in one hour.

Commenced boring, December 14th, 1910, discontinued boring, December 31st, 1910.

Hole abandoned March 16th, 1911.

Boring double shift.

Name of Rock	Color and other General Characteristics	Thickness Bored Ft.	Thickness Bored In.	Total Depth Ft.	Total Depth In
Surface	Soil and clay	10	7		
Sandstone	Gray	34	9	45	4
Shale	Gray, banded, with balls of ironstone	33	11	79	3
Shale	Black, mixed with coal	2	2	81	5
Clay Shale	Blueish gray, with balls of ironstone	4	2	85	7
	Black, mixed with coal	2	0	87	7
Clay Sandstone	Blueish gray, with balls of ironstone	7	5	95	0
Shale	Blueish gray, with balls of ironstone	49	2	144	2
	Black, sandy	4	3	148	5
Sandstone	Gray, hard	35	9	184	2
Shale	Gray, banded	15	4	199	6
Sandstone	Gray, hard	15	0	214	6
Shale	Gray	24	9	239	3
Sandstone	Gray, hard	45	4	284	7

This hole cost $862.23 or $3.26 a foot made up as follows:

Labor	$ 86 10
Management	665 00
Fuel (coal)	14 00
Light, oil, waste, etc.	3 94
Carbon wear	42 00
Lumber for housing, etc.	13 04
Drive pipe	7 80
Steel shoe	5 75
Blank bits, core lifters, shells, special reamer	24 60
Total	$862 23

NOTE—The high cost of this hole is in the main due to the delay in procuring casing: the drill-operator and shift-boss being under salary during time drill was idle. It was finally decided to abandon the hole and not case it.

NUMBER FOUR HOLE.

Location—594 feet north of bore-hole Number Three, and 325 feet west of Coal Brook.

Hole put down for Acadia Coal Company.

Mineral sought—Coal.

Dip of strata—78° to vertical, direction northerly.

Fastest rate of boring—3 feet 6 inches in one hour.

Average rate of boring—.8 of one foot in one hour.

Commenced boring, April 6th, 1911, finished hole May 8th, 1911.

Boring double shift.

Name of rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface......	Soil and yellow clay...........	22	8	....	....
Sandstone....	Gray, fine grained with balls of ironstone............	11	4	134	0
Shale or clay	Gray, with balls of ironstone...	52	8	186	8
Shale.......	Gray, banded, with balls of ironstone.	72	11	259	7
Shale.	Gray dark, slicken-sided badly broken	16	0	275	7
Sandstone...	Gray, with balls of ironstone...	14	5	290	0
Shale.........	Gray, very much broken.....	20	4	310	
Sandstone....	Grey hard	6	8	317	

This hole cost $585.00 or $1.846 a foot made up as follows:—

Labor.................................	$127.50
Management............................	380.00
Fuel (Coal)...........................	21.00
Light, oil, waste, etc................	3.40
Carbon wear	28.00
Truckage..................	10.50
Blank bits, core shells, core lifters.......	14.60
Total............................	$585.00

Number Five Hole.

Location—600 feet north of bore-hole number three, and 77 feet east of a small brook.

Hole put down for Acadia Coal Company.

Mineral sougth—Coal.

Dip of strata—12° to vertical, south-west.

Fastest rate of boring—3 feet in one hour.

Average rate of boring—.68 of one foot in one hour.

Commenced boring, May 22d, 1911, finished hole August 4th, 1911. Boring double shift.

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface	Soil and yellow clay	11	9	......	......
Clay	Gray, dark	2	7	14	4
Sandstone....	Brownish gray, hard	7	2	21	6
Clay	Gray, dark	2	4	23	10
Sandstone....	Brown, hard	10	2	34	0
Shale	Gray	8	7	42	7
Sandstone...	Gray, brownish, hard, with coarse bands	62	8	105	3
Shale	Gray, banded	30	0	135	3
Sandstone....	Gray, dark, hard	7	9	143	0
Shale	Gray, banded	2	8	145	8
Shale	Black, mixed with coal	3	10	149	6
Clay	Gray	4	0	153	6
Sandstone...	Gray, dark, hard, very coarse .	10	4	163	10
Sandstone....	Gray, dark	10	0	173	10
Shale	Gray	4	2	178	0
Conglomerate	Hard	62	3	240	3
Sandstone...	Brown and gray, banded	32	6	272	9
Conglomerate	Brownish, coarse	7	1	279	10
Sandstone....	Brown and gray, banded, fine grained	40	2	320	0
Shale	Gray, banded	18	8	338	8
Sandstone....	Brownish gray, hard	9	6	348	2
Shale	Dark gray	20	6	368	8

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Clay	Gray, with hard yellow balls	3	4	372	0
Sandstone	Gray, hard	11	9	383	9
Sandstone	Gray, hard, banded	14	0	397	9
Shale	Gray and dark gray, banded	5	9	403	6
Sandstone	Gray	2	0	405	6
Shale	Gray	3	0	408	6
Sandstone	Gray	4	9	413	3
Conglomerate		12	9	426	0
Sandstone	Gray, banded	4	0	430	0
Shale	Gray	17	8	447	8
Sandstone	Gray, banded	34	10	482	6
Shale	Gray, dark	24	0	506	6
Sandstone	Gray	12	0	518	6
Conglomerate	Hard	10	8	529	2
Shale	Gray, banded, sandy	32	1	561	3
Sandstone	Brownish, hard	5	3	566	6
Shale	Gray	17	0	583	6
Sandstone	Brownish gray, hard	38	0	621	6

This hole cost $976.57 or $1.57 a foot made up as follows:

Labor	$186 50
Management	532 00
Fuel (coal)	56 00
Light, oil, waste, etc	6 65
Carbon wear	95 00
Blank bits, core lifters, core shells, etc	40 60
Miscellaneous expenses	59 82
Total	$976 57

NUMBER SIX HOLE.

Location—Situated at Plymouth on the property of Neavine Vasheresse, 440 feet south of New Glasgow pumping station, and about 25 feet from East River road.

Hole put down for Acadia Coal Company.

Mineral Sought—Coal.

Dip of Strata—North-east, 34° at surface, 25° at a depth of 115 feet, 24° from depth of 175 feet to bottom of hole.

Fastest rate of boring—3 feet, 3 inches, in one hour.

Average rate of boring—.9 of one feet in one hour.

Commenced boring, August 21st, finished hole October 2d, 1911.

Boring double shift.

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface	Soil and gravel	5	....		
Shale	Gray	13	......	18	0
Sandstone	Gray, with sulphur balls	33	6	51	6
Shale	Gray, sandy	32	0	83	6
Sandstone	Gray, hard, banded	17	0	100	6
Shale	Dark gray, with bands of ironstone	13	2	113	8
Sandstone	Gray, hard banded	2	2	115	10
Shale	Gray, with bands of ironstone.	22	0	137	10
Shale	Gray, with bands of sandstone	6	8	144	6
Clay	Gray, with bands of ironstone and sandstone	29	3	173	9
Shale	Dark Gray	1	6	175	3
Coal		4	5	179	8
Shale	Black with bands of coal	16	10	196	6
Shale	Dark Gray	2	3	198	9
Shale	Gray	15	1	213	10
Sandstone	Gray, fine grained	20	1	233	11
Shale	Gray, with balls of ironstone	18	3	252	2
Shale	Black, with small bands of coal	3	2	255	4
Shale	Gray, with balls of ironstone	16	10	272	2
Sandstone	Gray hard	4	2	276	4
Shale	Gray, with balls of ironstone	6	6	282	10
Sandstone	Gray, fine grained	10	6	293	4
Shale	Gray with balls of ironstone	19	8	313	0
Sandstone	Gray	23	3	336	3
Shale Shale	Gray with balls and bands of ironstone	20	7	356	10
Shale	Black mixed with coal	2	6	359	4
Shale	Gray with balls of ironstone	0	8	360	0

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Coal..........	Dark gray and black with narrow bands of coal...........	10	8	370	8
Shale..........	Gray........	2	8	373	4
Shale..........	Black with narrow bands of coal	1	8	375	0
Shale.........	Gray............................	10	0	385	0
Sandstone.....	Gray, fine grained.............	2	7	387	7
Clay..........	Gray...........................	5	12	393	6
Sandstone....	Gray fine grained.............	9	3	402	9
Clay........	Gray...........................	9	9	412	6
Shale...	Dark gray..................	9	0	421	6
Sandstone.....	Gray with bands of ironstone..	11	2	432	8
Clay	Gray with bands of ironstone..	12	3	444	11
Sandstone.....	Gray, hard.......	1	5	446	4
Clay..........	Gray...........................	3	5	449	9
Sandstone.....	Gray...........................	5	4	455	1
Clay.........	Gray....................	4	11	460	0
Shale..	Black with coal................	8	9	468	9
Shale.......	Gray...........................	1	3	470	0
Sandstone....	Gray...........................	15	3	485	3
Shale.........	Gray...........................	5	6	490	9
Sandstone.....	Gray...........................	21	10	512	7
Shale.........	Gray...........................	23	11	536	6
Sandstone.....	Red fine grained....	9	6	546	0
Sandstone....	Gray..........	16	2	562	2
Shale........	Gray.................	6	10	569	0
Sandstone....	Gray........................ .	1	7	570	7
Shale........	Gray..........................	18	11	589	6
Sandstone.....	Gray...........................	9	0	598	6
Clay........	Gray...........................	15	4	613	10
Sandstone.....	Gray with bands of ironstone..	12	8	626	6
Clay	Gray with bands of ironstone..	6	2	632	8
Sandstone.....	Gray with bands of ironstone..	10	2	642	10
Clay..........	Gray with bands of ironstone.	5	4	648	2
Sandstone....	Gray with bands of ironstone..	8	2	656	4
Shale.........	Gray and black with bands of	6	0	662	4
Sandstone....	coal	8	9	671	1
	Gray..........	7	9	678	10
Shale..........	Gray..........................	3	0	681	10

This hole cost $576.57 or $0.84 a foot made up as follows:—

Labor	$146 40
Management	354 70
Fuel (Coal)	26 00
Light, oil, waste, etc	7 38
Carbon wear	5 00
Material used in housing, boxes, etc.	3 75
Truckage	10 00
Blank bits, core-shells, lifters	23 34
	$576 57

Drill Number Two.

Steam-power Diamond, producing 15-16 inch core.

MOOSE RIVER GOLD MINES, HALIFAX COUNTY.—Holes numbers one, two and three.

This machine was taken to Moose River in December, 1910, by Mr. M. J. O'Brien for the purpose of determining the structure of the gold measures on the Touquoy property at that district. Three attempts were made to put down a hole through the dome of the anticlinal fold. The holes were located 150 feet west of what is known as the Big North Shaft. Great difficulty was met on account of the faulted condition of the strata causing the holes to cave very badly: while it might have been possible to get a hole down, the cost would have been very high and it was decided to abandon the project.

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface	Clay and boulders	5	0	....	....
Quartzite	Gray	5	8	10	8
Quartz		0	10	11	6
Quartzite	Gray	2	8	14	2
	NO. 2 HOLE.				
Surface		3	6	....	....
Quartzite	Gray	8	0	11	6
	NO. 3 HOLE.				
Surface		3	0	....	....
Quartzite	Gray	12	4	15	4
Quartz		0	8	16	.....

The total number of feet bored was 41 feet 8 inches, and this work cost $254.25 or $6.20 a foot made up as follows:—

Labor	$ 74 05
Management	54 00
Light, oil, waste, etc	70
Carbon ware	24 00
Freight and truckage	71 00
Miscellaneous expenses	30 50
Total	$254 25

Drill Number Three.

Hand power Diamond drill, producing 15-16 inch core.

This machine on completing Number 5 bore-hole at Maccan, was sent to the storehouse and was not again in operation during the year.

The record and cost-sheet of Number 5 hole was published in the 1910, report and is therefore not included in this report. The cost and depth bored are however included in the 1911 costs and summary statement, as they rightly belong to this year's work.

Drill Number Five.

Steam-power Calyx producing 6 inch core.

BIG MARSH, ANTIGONISH COUNTY.—HOLE NUMBER TWO.

Location.—Situated alongside of a small brook, on D. D. McDonald's property 1955 feet, north 30° west of the corner of D. J. McDonald's house, Big Marsh Post Office, and 2260 feet west of Number One bore-hole.

Hole put down for.—T. J. Sears et al.

Mineral sought.—Coal.

Dip of strata.—North at an angle of 45°.

Fastest rate of boring.—6 feet 7 inches in one hour.

Average rate of boring.—1 foot in one hour.

Commenced boring.—January 27th, 1911, finished hole March 8th, 1911.

Boring double shift.

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface	Clay, gravel, and bonlders	19	6	......	......
Sandstone	Gray, very coarse	3	.....	21	6
Sandstone	Red	1	...	22	6
Clay & B'lders	Red and gray	11	......	33	6
Sandstone	Gray	7	......	40	6
Sandstone & Conglomerate	Gray	10	......	50	6
Sandstone	Gray	102	6	153	0
Sandstone & Conglomerate	Gray	36	......	189	0
Sandstone	Gray	18	0	207	0
Sandstone & Conglomerate	Gray	21	6	228	6
Sandstone	Gray	15	......	243	6
Sandstone & Conglomerate	Gray	201	6	445	0
Sandstone and Shale	Gray and dark gray	15	0	460	0
Sandstone	Gray, fine graine	15	0	475	0
Sandstone	Gray, coarse	15	0	490	0
Shale	Dark gray	14	0	504	0
Sandstone and Shale	Gray and dark gray	12	6	516	6
Sandstone	Gray	38	6	555	0
Shale	Dark gray and sandy	2	0	557	0
Shale	Dark gray, soft	3	0	560	0
Sandstone	Gray	4	0	564	0
Shale	Black, mixed with coal	3	0	567	0
Shale and Sandstone	Dark gray	4	6	571	6
Shale	Dark gray and sandy	4	0	575	6
Shale & Coal	Mixed	2	6	278	0
Shale	Dark gray and sandy	2	6	580	6
Shale	Dark gray and very soft	3	0	583	6
Sandstone	Gray	27	6	611	0
Conglomerate	Gray	124	6	735	6
Sandstone & Conglomerate	Gray	18	0	753	6
Sandstone and Shale	Dark and light gray, with streaks of limestone	74	0	827	6

This hole cost $886.83 or $1.07 a foot, made up as follows:

Labor	$312.50
Management	216 77
Fuel (coal)	175 00
Light, oil, waste, etc	16 00
Shot	30 00
Gravel	1 00
Material used in housing, boxing, cores, etc	12 00
Casing pipe	5 52
Truckage	26 04
Shot-bits	48 00
Core-barrels	44 00
Total	$886 83

HOLE NUMBER THREE.

Location.—Big Marsh, on John McLellan's property alongside of a small brook called McLellan's Brook, 110 feet south from a bridge on the "Old Gulf Road" where it crosses McLellan's Brook, and 1455 feet from the north-west corner of Daniel Boyd's house and 2100 feet north-east of bore-hole Number 1.

Hole put down for—T. J. Sears.

Mineral sought—Coal.

Dip of strata—north, 15° at surface: 80° at depth of 500 feet.

Fastest rate of boring—5 feet 7 inches in one hour.

Average rate of boring—1.08 feet in one hour.

Boring double shift.

Name of Rock	Color and other General Characteristics	Thickness Bored Ft.	Thickness Bored In.	Total Depth Ft.	Total Depth In
Surface	Shale and Clay, red and brown.	16	0	......	....
Shale	Dark gray	82	0	98	0
Sandstone	Dark gray and light gray	15	0	113	0
Shale	Dark gray	2	0	115	0
Sandstone	Dark gray	12	6	127	6
Conglomerate	Gray	15	6	143	0
Sandstone	Gray	11	6	154	6
Sandstone and Shale	Dark gray, banded	16	6	171	0
Sandstone	Gray	15	0	186	0
Shale	Dark gray, arenaceous	19	0	205	0
Sandstone and Shale	Gray and dark gray banded	14	0	219	0
Shale	Dark gray, sandy	46	0	265	0
Sandstone and Shale	Dark gray, banded	27	0	292	0
Shale	Dark gray	5	0	297	0
Sandstone and Shale	Dark gray, banded	67	0	364	0
Shale	Dark gray, very soft	12	6	376	6
Shale and Sandstone	Dark gray, narrow bands of sandstone	124	0	500	6

This hole cost $717.24 or $1.43 a foot made up as follows :—

Labor	$217	50
Management	111	54
Fuel (coal)	175	00
Light, oil, waste, etc	14	50
Shot	36	00
Gravel	1	00
Material used in housing, boxing cores, etc	12	00
Casing pipe	5	00
Freight, truckage, miscellaneous expenses	132	70
Shot bits	12	00
Total	$717	24

Drill No. 7.

Hand or horse power Calyx producing 1-3/4 inch core.

WENTWORTH CENTRE, CUMBERLAND COUNTY.

Three Holes.

HOLE NO. 1.

This hole before reaching bed-rock encountered a boulder (depth-of 13 feet) and was abandoned.

HOLE NO. 2.

Location—Wentworth Centre, 232 feet from centre of sump at mouth of No. 1 Tunnel in a direction south, 30° west.

Mineral sought—Copper ore.

Dip of Strata—north 30° west, 12°.

Hole put down for—G. B. Howard.

Fastest rate of boring—9 feet in one hour.

Hole commenced—September 16th, 1910, finished October 6th, 1910.

Boring single shtft—by horse power.

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface........	Sand and gravel...............	12	6		
Sandstone....	Red and gray.............,....	2	6	15	0
Shale.......	Red............................	13	0	28	0
Sandstone.....	Red	12	1	40	1
Shale..........	Red...........................	7	7	47	8
Claystone and Sandstone..	Alternate band red......	41	1	88	9
Sandstone....	Blue-gray		10	89	7
Sandstone.....	Red coarse....	22	6	112	1
Sandstone.....	Blue-gray......................	1	6	113	7
Shale........	Red..........	22	4	135	11
Sandstone.....	Red fine-grained...	4	0	139	11
Shale........	Red....	5	3	145	2
Sandstone....	Red fine-grained..............	6	9	151	11

This hole cost $190.72 or $1.26 a foot made up as follows:—

Labor	$118 15
Management	56 15
Light, oil, waste, etc.	20
Shot	1 72
Freight	10 00
Shot bit	4 50
Total	$190 72

HOLE NO. 3.

Location—Wentworth Centre, Cumberland County. On the wharf at the mouth of No. 1 tunnel, boring in river bed.

Mineral sought—Copper Ore.

Dip of Strata—North 30° west, 12°.

Hole put down for George B. Howard.

Average rate of boring—1.2 feet in one hour.

Hole commenced—October 8th, 1910, finished October 18th, 1910.

Boring single shift—operated by horse-power.

Name of Rock	Color and other General Characteristics	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Sandstone	Gray and red, in thin layers	1	10	......	.....
Sandstone	Red, fine grained	4	6	6	4
Shale	Red	0	10	7	2
Sandstone	Red, fine grained	26	1	33	3
Shale	Red	23	2	56	5
Sandstone	Red, fine grained	11	3	67	8
Shale	Red	10	11	78	7
Sandstone	Red, coarse	7	0	85	7
Sandstone	Gray, coarse	1	0	86	7
Sandstone	Red, coarse	8	3	94	10

This hole cost $129.77 or $1.38 a foot, made up as follows:

Labor	$ 72 12
Management	41 92
Light, oil, waste, etc	15
Shot	1 08
Freight	10 00
Shot-bit	4 50
Total	$129 77

ONE HOLE.

McLELLAN'S BROOK, Pictou County.

Location—Alongside of McLellan's Brook and on land of John T. Turnbull,

Mineral sought—Oil shales.

Dip of strata—North-east, 45 degrees.

Hole put down for James Stewart, et al.

Average rate of boring—.77 of a foot in one hour.

Hole commenced August 11th, 1911, finished August 24th, 1911.

Boring single shift, and by hand.

Name of Rock	Color and other General Characteristics.	Thickness Bored		Total Depth	
		Ft.	In.	Ft.	In.
Surface	Clay and gravel	7	6	......	......
Shale	Gray	33	6	41	0
Shale	Brown, oil bearing	5	6	46	6
Shale	Blueish gray	15	0	61	6

This hole cost $118.19 or $1.91 a foot, made up as follows:

Labor	$ 42 00
Management	48 39
Shot	70
Lumber	30
Casing pipe	40
Freight and truckage	26 40
Total	$118 19

I remain,

Your obedient servant,

H. B. PICKINGS,

Deputy Inspector of Mines.

Provincial Museum and Science Library.

PROVINCIAL MUSEUM,
Halifax, N. S., 24th January, 1912.

To HIRAM DONKIN, ESQ., M. E.,
Deputy Commissioner of Public Works and Mines.

Sir,—I respectfully present herein a report on the Provincial Museum of Nova Scotia and the Provincial Science Library for the calendar year 1911.

PROVINCIAL MUSEUM.

Accessions.—During the year 1911 there were received and catalogued with all available data, 133 specimens, representing 93 accessions. Of these, 119 specimens (89 accessions) relate to Nova Scotia, and 14 specimens (4 accessions) are from elsewhere. This is the smallest number of specimens received since 1900, and is probably the result of the removal of the Museum being in progress, which gave little time for anything but work connected with the transfer, as well as the fact that our Nova Scotian colleclections are becoming yearly more nearly complete.

The following is a brief classified summary of the specimens received: mineralogy, 41 specimens; petrology, 2; palæontology, 2; botany, 0; zoology, 61; anthropology, 10; metallurgy, industry and commerce, 7; naval architecture, 0; history, 5; art (including historic pictures), 4; numismatics, 1; total, 133.

Specimens received since 1900—The following summary gives the number of additions that have been received during the past twelve years, since the re-organization of the museum:

1900	1202	specimens, or	133	accessions
1901	2660	"	" 546	"
1902	2039	"	" 816	"
1903	1911	"	" 744	"
1904	742	"	" 494	"
1905	722	"	" 210	"
1906	1510	"	" 135	"
1907	526	"	" 117	"
1908	585	"	" 142	"
1909	1198	"	" 134	"
1910	1586	"	" 189	"
1911	133	"	" 93	"
Total: 12 years	14,814		3,753	

An average of 1,235 specimens, and 313 accessions a year.

Number of specimens in the museum.—The total number of specimens in the museum on 31st December, 1911, was 24,913. This includes 10,099 specimens retained when the museum was revised in October-December, 1899, with 14,814 specimens added from 1900 to date.

Classified summary of the number of specimens in the Provincial Museum, to 31st December, 1911.

DEPARTMENT.				NO. OF SPECIMENS.
Geology:				
Mineralogy, Nova Scotian		3658		
Foreign		1964		
			5622	
Petrology (rocks) Nova Scotian		1878		
Foreign		477		
			2355	
				7977
Palæontology:				
Plants, Nova Scotian		510		
Foreign		6		
			516	
Invertebrates, Nova Scotian		238		
Foreign		493		
			731	
Vertebrates, Nova Scotian		37		
Foreign		60		
			97	
				1344
Botany: Nova Scotian, herbaria	3556			
Miller's paintings of wild flowers of N. S.	99			
Fruits	54			
Woods	63			
Grains	55			
		3827		
Foreign, herbaria	1497			
Economic seeds, Canada	100			
Woods	396			
Cotton	7			
		2000		
			5827	
				5827

Zoology:			
Invertebrates (exclusive of molluscs & insects), Nova Scotian	323		
Foreign	268		
		591	
Molluscs, Nova Scotian	541		
Foreign	925		
		1466	
Insects, Nova Scotian	1967		
Foreign	90		
		2057	
Fishes, Nova Scotian	393		
Foreign	50		
		443	
Batrachians, Nova Scotian	61		
Foreign	15		
		76	
Reptiles, Nova Scotian	36		
Foreign	50		
		86	
Birds (including nests and eggs), Nova Scotian	464		
Foreign	50		
		514	
Mammals, Nova Scotian	225		
Foreign	24		
		249	
			5482
Anthropology:			
Archæology, Nova Scotian	1239		
Foreign	71		
		1310	
Ethnology, Nova Scotian	48		
Foreign (in storage), about	1004		
		1052	
			2362
Metallurgy and other industries, and commerce, Nova Scotian	159		
Foreign	1		
			160
Naval architecture, Nova Scotian	8		
Foreign	0		
			8
History:			
Historical relics, &c., Nova Scotian	131		
Foreign	46		
			177

Art:			
Sculpture, prints (including historic ones), and paintings, relating to Nova Scotia	33		
Foreign	10		
		43	
Ceramics, relating to Nova Scotia	53		
Foreign	65		
		118	
			161
Numismatics: coins, medals and paper currency, Nova Scotian	105		
Foreign	1310		
			1415
Grand total, number of specimens in Provincial Museum, on 31st December, 1911			24,913

Table showing the number of specimens that are Nova Scotian and the number that are not, in each department of the museum.

Departments.	No. of Specimens.		
	Nova Scotian	Foreign	Total
Mineralogy	3658	1964	5622
Petrology	1878	477	2355
Palæontology	785	559	1344
Botany	3827	2000	5827
Zoology	4010	1472	5482
Anthropology	1287	1075	2362
Metallurgy and other industries, &c.	159	1	160
Naval architecture	8	0	8
History	131	46	177
Art	86	75	161
Numismatics	105	1310	1415
Totals	15,934	8,979	24,913

Old specimens retained in the museum when it was revised in October-December, 1899	10099
Specimens received and catalogued with full date, from 1st January, 1900, to 31st December, 1911, both inclusive, (namely accessions nos. 1 to 3753)	14814
Total	24,913

Economic minerals at Provincial Exhibition—The permanent collection of economic minerals and mineral products of Nova Scotia, was as usual shown in the mines building, under the museum's superintendence, during the provincial exhibition of 30th August to 7th September last. I was present each day and furnished any information that was desired, and determined mineral specimens brought in by visitors from the country. But few additions were made to this collection, because of lack of room for their accommodation. The Port Hood coal exhibit had to be removed as it had much deteriorated. The judges of class 113, awarded silver medals to the following new or changed exhibits:—

John Kline, Halifax, for cut and polished granite work.

H. F. Donaldson, Enfield, Hants County, for gypsum (from near Enfield), iron pyrites (from Pleasant Bay) and copper ore (chalcopyrite from Whycocomagh).

They also again drew attention to the necessity of revising class 113 of the prize-list, under the direction of the judges and the curator of the museum, as the list is not at all in a satisfactary state. At the close of the exhibition, the exhibits were all covered and the building put in order for the winter.

Minerals in museum.—Reference may be made to the following accessions of interest: Impure *native sulphur* (probably a decomposition product), accession no. 3740, from small cavities in quartzite near contact with slate (Lower Cambrian), to southward of Mount Edward, near Old Ferry road, between Dartmouth and Preston, Halifax County, from W. H. Mosher.—*Chalcopyrite* (3708) from lease of P. C. Doyle and others, ¾ mile north-west of Whycocomagh, Inverness County, from H. F. Donaldson.—*Gypsum*, (3737, 3739), from Ogden's pond, Antigonish County, and from Plaster Rock, near Dean, Halifax County, from R. E. Verge and G. J. Huestis.—*Wolframite* and *tungstite* in quartz (3688, 3743), from dike or vein in granite, Ernest Turner's tin prospect pit, Wallabach stream, half-way between Camp and Harris lakes, Mill road, 3¼ miles north of New Ross, Lunenburg County, from A. L. McCallum.—A large and rich specimen of *scheelite* with arsenopyrite in quartz (3678) from 300 feet in incline-shaft, Scheelite Mines Company's property, Scheelite, Moose river, Halifax County, from A. A. Hayward. It was in this locality that scheelite was discovered in 1907.—*Scheelite* (3689) from drift at Fifteen-mile brook, Queens County, from the discoverer, Walter H. Prest. This was found during 1911, and in October of the same year, E. R. Fairbault of the geological survey of Canada, discovered this valuable tungsten-bearing mineral *in situ* in quartz vein prospected for gold by Mr. Ells at Fifteen-mile brook, near Middlefield, a short distance to the northeast of where Mr. Prest had previously found numerous loose pieces of the same mineral. —*Scheelite* with arsenopyrite in quartz (3698), reported to have come from near Tangier, Guysborough County.—*Amethystine quartz* (3692) from granite, Soldier lake, near Waverley, Halifax County, from B. D. Fultz.—A couple of small *common opals* or *opal jaspers* (3661), reddish-brown in color, mottled with white, from quartz in red and gray granite, about one mile south-southwest of south end of Lake Ramsay, at or near Reeves tin prospect, Lunenburg County, from Charles Keddy, who had other but better, specimens of the common opal from the same place last year, as noted in the museum report for 1910.—*Serpentine* variety *chrysotile* ("asbestos") in massive serpentine (3686), from south side of Catalone lake, Cape Breton County, from R. D. Anderson. —*Kaolinite* (3736, 3744), from decomposed pegmatite dike, on James R. Kennedy's property, near Dauphinee's mountain, between Boutilier's point and Head of St. Margaret's bay, Halifax County, from R. D. Anderson and A. L. McCallum.

Invertebrates (*exclusive of molluscs and insects*).— An interesting, and apparently rare, small *leech* (3663), undertermined, but apparently related to the genus *Glossiphonia*, taken in the river above the Second Dartmouth lake (Port Wallace), about 2½ north of Dartmouth, Halifax County, on 15th October, 1910, has been presented, as a microscopic slide, by Prof. C. L. Moore.—*Common sand-shrimp* (*Crangon vulgaris*, Fab.), 3690, from Tuft's cove, Halifax harbour, presented by L. A. Purcell.

Fishes.—Believing that alcoholic specimens, although of most value to the scientist, do not much interest the general public, we have begun to form a collection of mounted specimens of the more common species of fish, and have also made experiments with painted plaster-casts, which we hope may prove of interest to the many persons who merely desire to get an idea of the outward appearance of a fish. Such specimens, however, can never replace the alcoholic ones for the purpose of scientific study, and rare species will always be preserved in alcohol, although even in such cases, plaster casts may be made before the specimen is placed in the jar.

Reptiles.—The only addition is a *spotted garter snake* (*Thamnophis sirtalis* var. *ordinata*), 3722, from Onslow, Colchester County, which has been mounted and added to a growing collection of mounted batrachians and reptiles, which has been begun for the reasons just mentioned.

Birds.—Among rare or interesting accessions are the following: *Horned grebe* (*C. auritus*), adult, 3666, from Woodside, Dartmouth,9th February 1911, taken by L. A. Purcell. It is rather rare in Nova Scotia.—*Pintail* (*D. acuta*), male, 3753, another rare species, shot just to the north of the dike-bridge, ¾ mile north of McDonald s hotel, Lawrencetown, Halifax County, 26th December, 1911, by Charles Shaw of Mineville. This is an extremely late date for such a bird to occur here. The very mild, open weather that was then prevailing, doubtless accounts for its being met with at such a season.—*Wood duck* (*A. sponsa*), adult male, 3725, a very rare and beautiful species, taken at Duck lake, one mile north-east of Mineville, near Lawrencetown, Halifax County, 19th September, 1911, by J. R. Shaw of Mineville. It was with another male of the same species and six black ducks (*A. obscura*).—*Black-crowned night heron* (*N. nycticorax nævius*), immature, 3665, a very rare species, taken at Three-fathom harbour Halifax County, 6th October, 1910, by Wesley Gates.—*Red phalarope* (*C. fulicarius*), 3700-3702, three specimens, taken off McNab's island, Halifax harbour, 5th May, 1911, by Joseph Perrin. Many of these birds were flying over Finlay's cove for three or four days, rapidly picking up food from the surface of the water while on the wing. They then left for their breeding range in the north.—*American golden plover* (*C. dominicus*), two adults in autumnal plumage, 3668 and 3717, one taken on Onslow marsh, Truro, Colchester County, 5th September, 1909, by F. B. Tully, and the other at Three-fathom harbour, Halifax County, 7th September, 1911, by Wesley Gates. This is now a rare bird here, and is becoming yearly more rare, although it was formerly very abundant and then arrived in the fall in large flocks.—*Marsh hawk* (*C. hudsonius*), male, 3720, from marsh near Onslow, Colchester County, 22nd August, 1911, taken by G. Blanquist.—*Yellow-billed cuckoo* (*C. americanus*), 3728, an excessively rare bird in Nova Scotia, shot in an alder grove, about four miles northwest of Shubenacadie, Hants County, 4th October, 1911, by John W. Willis of Halifax, by whom it was presented to the museum. The only other recorded instance of its occurrence in this province, is one taken at Halifax, which the late Andrew Downs mounted for General Lord Russell (Downs's "Catalogue of birds of N. S.", Trans. N. S. Inst. Nat. Sc., vol. vii). There is, however, another specimen in the museum collection, without doubt mounted by Downs, which must have been taken near Halifax (it has no data with it), and which doubtless is an earlier occurrence of this species.—*Rose breasted grosbeak* (*H. ludoviciana*), adult female, 3669, taken near Salmon river, Truro, Colchester County, 31st August, 1910, by H. S. Cruikshank. This bird is rare about Halifax,but is more frequently met with near Truro,Pictou,etc.

Mammals.—The following accessions are worthy of note: *Red-backed mouse* (*Evotomys gapperi*, variety undertermined), 3674, taken at Nictaux, Ann. Co., June, 1910, by Dr. Frank H. Reid; and another of the same species, 3695, from Port Wallace locks, Second Dartmouth lake, 21 January, 1911, taken by L. A. Purcell.—Specimens of the *white-footed mouse* (*Peromyscus luscopus*), 3679, from Truro, Col. Co., 1 March, 1911; and (3675-3677) from Nictaux, Ann. Co., June, 1910; the three latter being possibly a variety, or perhaps one or more of them a different species.—*Meadow jumping mouse* (*Zapus hudsonicus*, sub-species not determined), 3672, from Nictaux, June, 1910.—Also a specimen which may be the *pine mouse* (*Microtus pinetorum*), 3673, from Nictaux, June, 1910. The Nictaux specimens are all from Dr. F. H. Reid. The small mammals present a great deal of difficulty in positive determination, as they are subject to much variation in colour, size, etc., which places them in various sub-species which too frequently are apt to intergrade into each other. —*Say's bat* (*Myotis subulatus*), 3681, taken at Halifax in October, 1909. This seems to be one of the commoner bats of Nova Scotia, the hoary bat (*Lasiurus cinereus*), a larger species, being rare. The little brown bat (*Myotis lucifugus*) also seems to occur here, and is probably common.—We have also obtained a good example of the *raccoon* (*Procyon lotor*), 3719, from Little river, Halifax Co., October, 1908.—H. S. Cruikshank, taxidermist, of Truro, has lent us a mounted head of the *eastern moose* (*Alces americanus*), 3714, taken in Colchester Co.; and we have also received from him an interesting enlarged *photograph of a moose*, 3707, from life, taken by Norman C. Christie in the woods of Cumberland Co., on 14 March, 1905. We should certainly have a moose, mounted entire, in the museum, as it is the finest game animal we have.

Anthropology.—We have obtained an Indian *adze* (3693) of fine-grained, greenish black, hard slate or argillaceous quartzite, found about forty years ago on the Logan farm, on northern side of the river, about 700 feet below the wooden highway bridge across the Shubenacadie, at Elmsdale, Hants Co.—Also a so-called "*spear-head*" (3694), carefully formed, by grinding, from a greenish, fine-grained, hard slate; length (end missing), 5.80 inches; greatest width, 1 inch; thickness, .29 inch. Each of the sides is ground to an edge. It was found with the adze just mentioned. It belongs to a type of implement shaped like a poniard blade that is very rare in this province, and its exact use can only be conjectured, as any violent use of it would cause it to be shattered. A similar, but larger, specimen from Milton, Queen's Co., is fully described in the writer's paper on "Relics of the stone age in Nova Scotia" (Trans. N. S. Inst. Sc., vol. ix, p. 34), and there is also a very good example in the museum, in the DesBrisay collection, which has not yet been described. We have also a similar one (3394), of Beothuk workmanship, from La Couche, mouth of White bay, northeast Newfoundland. They may have some relationship, as to use, with very long, beautifully flaked blades which are met with near the Pacific coast of the United States.—C. I. McNab has presented a *single-grooved axe* (3727) of grey quartzite, found in the bed of a brook flowing from Duck pond to Beaver pond, 1⅛ inch north-northeast of Beaver Bank station, Halifax Co. These grooved axes are rare in Nova Scotia, whereas adzes are relatively common. The grooved axe was a typical Algonquin implement, whereas the prevalence of the adze seems in my opinion to show the presence or influence of Eskimos in Nova Scotia (see "Relics of stone age in Nova Scotia", Trans. N. S. Inst. Sc., vol. ix, pp. 37-38).—H. F. Donaldson has donated several specimens (3729-3734) from Enfield, Hants Co., including *stone arrow-heads* and *leaf-shaped implements* (knives?), one of the latter 4.90 inches long, and fragments of Indian *ornamented pottery* formed of reddish clay mixed with grains of quartz and mica, and poorly burnt. One of these fragments was part of the rim of a pot or bowl.

As an illustration of how one may be misled by the apparently artificial appearance of objects, I may instance the case of a large irregularly-shaped, semi-angular *granite boulder* (3680), 15½ inches long, with a cavity 5 inches deep in it, which was with much trouble sent to the museum by a friend. This stone was for many years supposed by people of the district in which it was found, to have been a mortar in which the ancient Indians ground grain or corn by means of a stone pestle. When I heard of it I was very anxious to obtain it, as stone mortars had never been found in Nova Scotia, and there was no evidence of our Indians having grown and ground grain or corn. It was found at the site of Joe Cope's (Micmac) "camp" in the woods on the west side of the Beaver Dam road, about ¾ mile east-southeast of Crusher lake, Beaver Dam gold district, Halifax Co., and had for very many years been known to the oldest people of the district, some of whom had heard their fathers also speak of this old stone "mortar" in the woods. On examination when it arrived at the museum last March, it was found to be merely a weathered granite boulder, which had once had in it a large crystal or concretion, which had entirely weathered out leaving a 3 or 6 sided hole, 5 inches deep and 4¾ inches in greatest diameter, with a flat bottom to the cavity which met the sides at a moderately sharp angle, the flat bottom and semi-angular shape of the cavity showing plainly that it had never been used as a mortar. The general shape of the boulder is furthermore more or less in harmony with the sides of the hole.

This reminds us of a large sandstone boulder about 16½ inches long "with a perfect impression of an Indian's foot," found on the shore of a lake near the residence of Christian R. Brown, near Roseway river, Shelburne Co., N. S., and presented by Anthony Hood, which occupied a prominent place in the museum of the late Judge DesBrisay of Bridgewater, and which I think is now in the town museum at that place. It was supposed that the impression (which is 9¼ inches long, 3 inches wide near the "toes", and 2⅞ inches wide near the "heel," where it is about 1½ inch deep) had been formed by the moccasined foot of an Indian, when the rock had been a sand-beach, and it was locally regarded as a great curiosity. I examined the specimen in 1900, and found that the so-called foot-print was merely a cavity left by the weathering out of a concretionary formation in the rock, leaving a depression resembling that which might have been made by a human foot. There was plain evidence of concentric layers about the depression, harmonizing with it, as did also the general outline of the boulder. In other local collections I have noticed curious natural forms of boulders that have been mistaken for the work of Indians, and a notable one is a stone, found at Tusket, and shaped somewhat like a modern carpenter's hammer, which is among Judge DesBrisay's collection in the provincial museum, and there are a few natural forms in the Patterson collection in Dalhousie college.

It may be noted that the death, at the Indian reservation on Spring brook, near Shubenacadie, on 20th May, 1911, of John Noel, the venerable chief of the Micmac Indians of Halifax, Lunenburg, Hants, King's, Colchester and Cumberland Counties, has removed one who has always taken much interest in our museum collection of Indian relics, and who has assisted in making additions thereto and has supplied to the writer much tribal traditional information of value. He was born at Pictou, N. S., on 3rd May, 1829, and was eighty-two years of age at the time of his death. He was a man who was highly esteemed by the tribe over which he presided, and by the white men with whom he came in contact. The election of a new chief will take place on 26th July, 1912. Chief Noel succeeded his step-father Chief James Paul, who had probably succeeded his uncle Francis Paul, who had succeeded Chief Samuel Paul (also known as Benjamin Paul).

Industries and commerce.—To this department we have added a number of samples (3747-3751) illustrating various *products manufactured from our Nova Scotian woods*, such as machine peg-wood, veneer ceiling stock, chair-seats and boxes, all manufactured by A. M Davison of Montrose, Colchester County. We already have a series of other samples of similar character, which we intend to combine into an exhibit to show what we locally make from our native woods. Not the least interest that will attach itself to such an exhibit, will be the regrettable realization of how little we actually manufacture in that line, whereas we might have very many important industries connected with our forest products.

History and art.—By far the most interesting accession to the department of historic relics, received during the year, was an *ancient breech-loading, wrought-iron cannon of the sixteenth century* (3742), found about the year 1840, imbedded in mud on the seashore immediately in front of a little pond, known as Sally Bush pond, about a half-mile southwestward of the site of the old Grand battery, and about half-way between that battery and the Barachois, on the western shore of Louisbourg harbour, Cape Breton County. It was discovered by Thomas Cannington who sold it to the late W. H. McAlpine of Louisbourg, and the latter sold it to Capt. G. L. Burchell, by whose brother, James T. Burchell of Sydney, C. B., it has been deposited in the museum for safe keeping. This extremely interesting historic relic is formed of about eight longitudinal bars of wrought-iron, hooped with iron rings, and reinforced by bands of iron between the rings. It is open at the breech for the insertion of the front end of a seperate mug-shaped breech-chamber which was held in place by wedges; and the gun has a long trail for facilitating the laying of the piece. The trunnions are mounted on a U-shaped crotch-support, with a point below for fixing it in a hole in the taffrail of a ship, so it could be readily swung around. The original total length of the cannon was 5 feet 4 inches, but 4.60 inches near the muzzle have been broken away and unfortunately lost The length of the barrel is 3 feet ¼ inch, the breech portion is 12¾ inches, and the trail 1 foot 3 inches. The bore was probably about 2¾ inches diameter, which would carry a spherical iron ball of about three pounds; but the bore is so corroded as to make the above-mentioned diameter only approximate. The reinforcing rings are 3.12 inches from centre to centre. Reference to the breech-chamber will be made further on.

This is one of the earliest types of breech-loading cannon. A removable wrought-iron breech-chamber (mug-shaped) with handle and vent, contained the powder charge. This chamber fitted into the rear of the bore, the ball having been inserted in advance, and an iron strap (now missing) supported the weight while the posterior end of the chamber was wedged up so as to resist the recoil. War vessels of the early sixteenth century were armed with small cannon which were fired from the taffrail (Greener, "The Gun", p. 37). Such cannon as the present one, were made in 1563; and a bronze one with breech-chamber, resembling this one, was about 1904 recovered in Tobermory bay from the wreckage of the "Florencia" one of the ships of the Spanish armada of 1588 (see Scientific American, 18th June 1904, p. 482). In the seventeenth century these primative breech-loading guns went out of use and were replaced by muzzle-loaders which minimized the escape of gas at the breech.

As to how the gun came to Louisbourg at such an early date, we can only conjecture as many others have done. In the place where it was discovered, there was also found an old anchor, and it was reported that, at low water, pieces of iron were seen imbedded in the stiff clay of the shore, which some thought might be other guns. Dr. George Patterson (Trans. Roy. Soc. Can., vol. viii, sec. ii, p. 164), thought that "these all plainly indicate the wreck of some vessel or vessels at the spot", and it was of the opinion that they were remains of the Portuguese expedition on our coast in the sixteenth century, mentioned in De Sousa's work. A year later Dr. Patterson changed his views, and read before the Royal Society of Canada a paper that dealt with this gun, in which he expresses the belief that it was a relic of the wreck of Sir Humphrey Gilbert's ship "The Delight" in 1583. This paper was not published. Bourinot (Trans. Roy. Soc. Can, vol. ix, sec. ii, pp. 284-287) gives a figure of the cannon and deals fully with its controversial history, and he finally sets aside Patterson's views and comes to the conclusion that the gun had belonged to any one of the European ships which occasionally frequented Louisbourg harbour (English harbour) in the sixteenth century. It is undoubtedly a relic of one of the very earliest voyagers, for De Monts did not settle in Nova Scotia till 1605, and Louisbourg was not settled by the French until 1713.

The iron breech-chamber of this gun is without doubt the one which has been for a number of years in the provincial museum, and which had been found at Louisbourg and presented by the late Lieut.-Governor, Sir Adams Archibald. It fits the breech of the gun (somewhat loosely), has a handle on one side and a vent for the priming, is 5.70 inches long, 3 to 3.20 inches outside diameter, and 2 inches diameter of bore. The late curator of the museum, Dr. Honeyman (Trans. N. S. Sect. Nat. Sc., vii, p. 207), thought it was a grenade, and it was so labelled, and thus its identity disguised, till I examined it several years ago and saw what it really was. No doubt whatever can now attach to it.

About 1840 another hooped cannon, like the one just described, was unearthed at an angle of what is known as "the old fort" or "the pirate fort" (Portuguese according to Dr. Patterson) about one hundred yards westward of St. Peter's canal, Richmond Co. It was so corroded that it went to pieces. (Patterson, Trans. Roy, Soc. Can., viii, sec. ii, p. 169.)

For further information regarding this interesting old cannon from Louisbourg, studente are referred to the following papers:

Louisbourg—past and present.—By Rev. D. Honeyman. Trans. N. S. Inst. Nat. Sc., vii (1885), p. 207.

The Portuguese on the northeast coast of America.—By Rev. Dr. Patterson. Trans. Roy. Soc. Can., viii (1890), sec. ii, pp. 164-165.

Notes on a hooped cannon found at Louisbourg. By Rev. Dr. Patterson. Trans. Roy. Soc. Can., ix (1891), p. lxvi. (Title only; not published; the contents may be gathered from Bourinot's paper in same volume).

Cape Breton and its memorials of the French régime. By J. G. Bourinot, LL.D. Trans. Roy. Soc. Can., ix, sec. ii, pp. 284-287, and figure on p. 284.

Compare also Greener's The Gun, 7th ed., figures on pp. 21 and 22 and accompanying text; also "Relics of the Spanish armada" in the Scientific American, 18 June, 1904, pp. 482-483, text and figure of bronze cannon and handled breech-chamber.

We have also added to our collections, a photograph (3699) of an interesting *water-colour painting of Halifax from the Dartmouth shore* made by Hibbert Newton Binney in 1791. Mr. Binney was collector of imports and excise at Halifax and grandfather of the late Bishop Binney. The original now belongs to Charles S. Blakeney of Halifax who purchased it a few years ago at the sale of the effects of the late William H. Hill of Halifax. The view is taken looking south-southeast from the shore between Dartmouth and Black-rock point. It shows five men hauling a seine in the foreground, George's and McNab's islands, two men-of-war at anchor, and the town of Halifax with St. Paul's and old Mather's churches, the old rambling fortifications on citadel hill with octagonal blockhouse (demolished in 1789) on the summit, and the barracks near the corner of Brunswick and Cogswell streets, etc. Altogether it shows the appearance of Halifax at a very interesting period of its history. The negative of this photograph has been filed by us for future use.—Albert Almon has presented a half-tone reproduction (3710) of an original sketch of *Louisbourg in 1731* by Verrier in the Paris archives; and a similar reproduction (3711) of an old engraving representing *the landing of the New England forces in the expedition against Cape Breton in 1745*, from the original owned by Dr. Warren of Boston.

From Frank Reyno we have received part of a large *iron ring* with shackle-like attachments (3718), of unknown use, from ten fathoms of water at the site of the wreck of H. M. S. "La Tribune" off Tribune head, Herring cove, Halifax harbor, on 16 November, 1797.

We have also received from the Rt. Hon. Lord Strathcona and Mount Royal an oak-mounted *shield made of copper* from Lord Nelson's famous flagships, the "Victory" and "Foudroyant" (3741).

Installation of museum in technical college.—In last year's report it was stated that the transfer of the museum collections from the room which they had occupied since 1899 at No. 201 Hollis street, to the two new rooms assigned to them in the technical college on Spring Garden road, had been begun on 24 October, 1910, and had been later suspended till the receipt of new table-cases in February. On 9 March, 1911, the work of removal was resumed, and was continued as rapidly as possible considering that the old table-cases had to be carefully emptied, repaired and grained, and the specimens cleaned and placed again in order before new lots could be received.

The twenty-two new oak table-cases (each 5 ft. by 2½ ft.) ordered on 5 January, 1911, came to hand early in the following month. The old pine table-cases, of the same dimensions, and about 32 in number, were transferred, on racks, with the specimens in them. This was accomplished without any breakage or serious disarrangement. They were then emptied and, being in bad condition, were overhauled by a carpenter whose work was completed on 12 June, and they were then painted inside a warm buff tint and grained on the outside to match the new oak cases and tables, so that all the furnishings are now of a uniform "golden oak" finish. This was finished by 5 July.

Each single specimen was cleaned with a vacuum-cleaner or washed, and then placed in order in the cases, this work requiring much time and the personal attention of the curator, so that labels, etc, might not be displaced or lost. The various oil paintings were also cleaned, varnished with the best mastic picture-varnish, the stretchers wedged up, and rehung. The collection of heads, horns, and large fishes, etc., were also cleaned and hung up.

The most of the collections had been received by 6 July, and the rooms were then cleaned throughout, the floors polished, and the museum was finally re-opened to the public on 21 August, although for sometime previously we had admitted those who particularly applied for admission. The old museum had been kept open nearly daily till the end of March, through the kindness of Mr. Hill. Since August a few odds and ends have been brought up at various times, as we were ready to deal with them.

As a result of the increased space at our disposal, a large number of Nova Scotian specimens of interest that could not be shown in the old quarters and had been kept in storage in drawers or on the floor under the tables, have now been placed in the glazed cases. So large was this amount, that dispite the much increased space in the new quarters, we found ourselves again crowded, and had great difficulty in properly placing the specimens, each department overrunning the space assigned it, which entailed much rehandling of the material. This is to be regretted, as a museum cannot be satisfactorily arranged when it lacks abundant room. The museum has been growing at a rapid rate with local specimens, as the accession figures for the past twelve years show. The space available for future additions is limited, unless they are once more placed in storage drawers.

During the year, more foreign material has been listed and packed in boxes to go into storage, and there remains almost no foreign specimens on exhibition, with the exception of seven cases of minerals and rocks for comparative purposes, and even they have been weeded-out and condensed.

Of our large Nova Scotian rock collection, we can show only a small typical series and will hold the residue in drawers where they are arranged according to formations. The coin collection has been improved in appearance by being brought up close to the glass by a false-bottom, and separating slips of wood assist in making the arrangement uniform.

Altogether I am glad to state that the collections now present a much more attractive appearance than they have ever done before, although it will be sometime before the curator with the many calls upon his time, will be able to get some of the departments into that degree of good order which such things require. One good feature now is, that practically all the specimens are under glass or in drawers, and not out where dust can deposit on them, as in the old room, which gave them an unavoidable unkempt appearance.

A good deal of final labelling has yet to be done, mostly in connection with the large samples of economic minerals, which are now for the first time displayed in glazed cases so that they can be readily seen; but as all of these have their accession numbers, this can be done later. Several ideas for supplying additional inspiration of a general character to those examining the specimens, will be worked in when time permits. In this way we hope to combine in some degree the advantages that would be obtained by a text-book illustrated immediately by specimens. For instance, the description, composition, differences, mode and places of occurrence, and uses of a mineral species, will stand at the head of and give information regarding the specimens of that mineral. This method is bringing good results in other museums and widens their usefulness.

It may be mentioned that this museum now only aims at collecting and displaying products of our own province, and it will do well if it succeeds in accomplishing that end. It can become a good local collection, but could only hope to be a very poor general one. The latter requires large means and ample room, and is far from us; although perhaps someday a small general typical collection from various parts of the world might be obtained for educational purposes. Such typical collections are not at all extensive, and can be shown in a comparatively small space.

Answers to inquiries.—Part of nearly every day is taken up with examining, testing and qualitatively determining mineral samples which are submitted by persons throughout the province. This is done without any fee or charge, and seems to be much appreciated by the public and particularly the prospector. A properly equipped chemical desk in the curator's office, makes this work more easily accomplished than in former years Quantitative work is only rarely undertaken, as we are not equipped for such work even if we had the time. The curator is also called upon to answer all kinds of inquiries on a variety of subjects which can only be realized by one who is in such a position and who is supposed to be a vade-mecum on every sort of useful as well as what might be termed useless information.

Public records.—The work of the curator as deputy keeper of the public records of the province, has continued, and he has given all the assistance he could to those who consult these documents for various purposes, both historic and legal. It may be observed that no fee whatever is made for searching the records and they are freely open for consultation or study by anyone. In September, David W. Parker, a member of the staff of the department of historical research of the Carnegie Institution of Washington, U. S. A., examined all of our records in order to prepare an inventory of the materials for United States history which are in our archives, for incorporation in a guide to such material in Canada, to form one of a series of such guides which that department has been preparing in various countries for several years past. Several years ago the late Dr. James Hannay, spent some months in preparing for the archives department at Ottawa, an annoted summary of all our public records at Halifax as well as such as are elsewhere in the province, for incorporation in a general guide to historical material in Canada. This work I understand was completed and the manuscript is now in the Ottawa archives office, and it seems to be regrettable that it has not yet been published, as no doubt it would be of much service to students who desire to know what kinds of records are in existence and were they are preserved and may be consulted. We ourselves much need a new catalogue of our own records, for the old one is entirely out of print, and does not contain the recent additions that have been made.—As mentioned in my last report, the military documents in our archives urgently need binding, and there are important papers in the storage chests which should be made more readily assessible by being bound. Opportunity has not yet offered, owing to other work, to transfer the records to the fire-proof vault in the technical college, but I trust it may be done ere long, although no harm is done by delaying the placing of valuable papers in a new vault that may not yet be absolutely dry. I have reason to hope that besides the vault, a room will be set aside in the basement of the technical college for the storage of such chests containing records as may not be accommodated in the vault. Such an additional room is a real necessity.

Portraits in province building.—By direction of the department of public works, I overhauled (13 December to 3 January) all the portraits in the legislative council chamber, province building. This had become necessary as most of them were being injured by pieces of plaster, etc., falling down and lodging between the canvas and the stretcher, and one of them furthermore had a hole in it, accidently made a few years ago. Each of the paintings was taken down, the crevices about the backs carefully cleaned of all dirt by means of a soft brush and a vacuum-cleaner, a little cotton-wool was then inserted between the canvas and the lower part of the stretcher, the stretcher was wedged-up as far as the state of the canvas permitted, and the entire back of the the picture was then covered with cotton so as to exclude dust and yet not stop ventilation. The front of the painting was carefully wiped and dried, and it was rehung. In the case of Ramsay's portrait of George III., a hole about 1½ inch diameter had been accidentally made, some years ago, in the ermine near the right leg. This was repaired with a canvas patch attached to the back with melted beeswax, the front was then "stopped," and when hard was again carefully tinted to match the original colour, so that it is now invisible. A small slit was similarly repaired in another part of the same picture.

It should be mentioned that several of these valuable portraits are greatly in need of relining (the process of applying new canvas to the entire back and then again tacking it to the stretcher), as they are in a bad condition, and some of the stretchers also should be renewed. The canvas of Sir Brenton Halliburton's portrait is split along the spectator's right-hand edge of the stretcher for nearly the full length, and that of William IV., is similarly torn on the left-hand side about one-third way from the bottom. These portraits consequently could not be wedged-up, which is injurious to them, as the canvas vibrates against the stretcher and braces and will eventually produce marks on the front which are difficult to remove (such as may be seen in the portrait of George III. and others). A canvas should be kept fairly taut in order to avoid all chance of injury. In the case of West's Chief-Justice Strange, the canvas in the lowest part had long ago rotted away, and in that vicinity is rough and blistered, probably from having once been hung over a fire-place. The canvases of George I. and his queen are very old and will need relining ere long, and those of George III. and Queen Charlotte are rather bad. Some of the pictures, such as Queen Sophia, George III., and Queen Charlotte, have from three to seven patches each applied to holes or slits. These pictures are a most valuable asset to the province, many of them having a high money value (probably totalling to about ten or twelve thousand dollars), and one cannot help from feeling that they are deserving of the attention of a thoroughly competent reliner and restorer, but for that purpose only a most skilled person should be selected.

As the portraits have been a frequent cause of difference of opinion, a few years I prepared, at the department's direction, a label for each, giving the subject and painter's name as far as known. I append a tentative list of the paintings, with a few annotations and references to inscriptions found on their backs, as these inscriptions are now covered and cannot readily be seen. It is well perhaps that these scanty items should be recorded, particularly so as to court correction, for much error has been current about them, and we should endeavor to secure what information we can regarding them.

(1). George I., probably, by Sir Godfrey Kneller (?).—As uncertainty exists as to both the subject and painter of this portrait, a photograph was made of it when it was down, and will be sent to the national portrait gallery, London, for identification, and the result will be given in our next report. I am of opinion that it is a replica of Kneller's George I. A pencil memorandum, however, on the back of the stretcher or frame, says "George IId.," but these pencil notes on some of the other portraits are not always correct. The portrait was shown at the 1881 exhibition of the Royal Canadian Academy of Arts, as "George II. by Sir Godfrey Kneller," a self-evident anachronism, as that king did not ascend the throne till four years after Kneller's death. I have understood that this and the next portrait were possibly the ones which tradition says were presented to the province, to hang in the then new province building, by the Earl of Dalhousie, lieutenant-governor from 1816 to 1820, but others consider, with reason, that those of George III. and his queen were the ones given by Dalhousie.

(2) Queen Sophia, probably, by Sir Godfrey Kneller(?).—This is a companion picture to the last, by the same brush, and is subject to the same doubt as to subject and artist. "Queen Caroline" is written in pencil on the back. Roughly scratched on the stretcher, is "C. R. W [?] 1850". What I have given as a W is not truly that letter; but is a cipher or monogram (which cannot be reproduced in type) consisting of two interlaced members of this letter, with an additional diagonal stroke through them. The last figure of the date is somewhat obscure.

(3) George III. by Allan Ramsay.—There can be no doubt that this is a replica of Ramsay's well-known portrait of George III. painted when the artist was appointed court-painter. A large number of these replicas were made by the King's command, for presentation purposes. "George III d" is written in pencil on the stretcher. For many years this was supposed to be a replica of Reynold's picture of the same king, but Reynold's portrait is in a different, but somewhat similar attitude. The original Ramsay portrait is now in the national portrait gallery, London. A replica of it at present hangs in Lord Dalhousie's residence, and it is maintained by some that this and the next one are the portraits presented to Nova Scotia by the late Lord Dalhousie who himself was a Ramsay.

(4) Queen Charlotte, by Allan Ramsay.—This is a companion picture to the last-mentioned. Both of them are finely executed, and the faces and hands, particularly those of the queen, are beautifully drawn and coloured. They may be considered the gems of the collection.

(5) William IV., by Sir William Beechey, R. A.—This portrait, showing the king in naval uniform with the robes of the garter, the drapery in the stiff style of the artist, but the head well painted, was presented by King William to the houses of assembly of Nova Scotia in 1833 (see letter of Sir P. Maitland in Journals of N. S. Assembly, 1833, p. 412).

(6) Queen Victoria, by A. T. Barrett.—This was painted a few years ago under commission from the provincial government, by Mr. Barrett of Boston, a native of Sackville, Halifax County.

(7) Chief Justice, Sir Thomas Andrew Strange, by Benjamin West, president of the Royal academy.—This portrait of the sixth chief-justice of Nova Scotia (in office from 1790 to 1797), who afterwards went to India, is signed near the lower left-hand corner, "Benj. West, London, 1798". It was painted when West was president of the royal academy and is one of the finest and most valuable pictures in the collection, sharing that honor with those of Ramsay. It is erroneously marked "Judge Blowers" in pencil on the back. Blowers's portrait is another one which will be shortly referred to.

(8) Chief Justice, Sir Brenton Halliburton, Kt., by Albert Gallatin Hoit.—This portrait of our chief-justice from 1833 to 1860, was painted by a Boston artist in 1840. It is signed in black, on a book, in lower right-hand part of the picture, "A. G. Hoit, Pinxt. 1840". Hoit was born in Sandwich, N.H., in 1809, and died 1856. He painted for a while in St. John, N. B., prior to 1839.

(9) Judge Thomas Chandler Haliburton ("Sam Slick").—This portrait representing the subject gowned and seated, I always understood was by an artist named Beetham, information which was doubtless derived from his grandson, the late Dr. E. Gilpin, jr., deputy commissioner of public works and mines, as it was so labelled in the life-time of that gentleman.*

(10) Lieut-Governor, General Sir William Fenwick Williams of Kars, Bart., by William Gush.—This portrait of the hero of Kars (1855), a famous son of Nova Scotia, and lieutenant-governor from 1865 to 1867, was painted by an English artist under a commission from the province. I have the date when the portrait was painted, but cannot now come upon it. On the stretcher is written, "No. 1. Genl. Williams, W. Gush, 15 Stratford place [London]"; and on the top of the frame, "Hung up, Halifax, Dec. 21/60 [or 69]".

(11) Major-General, Sir John Inglis, K. C. B., by William Gush.—Inglis was another gallant Nova Scotian, who gained renown by his services at Lucknow in 1857. On the back is the

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*The Hon. M H. Goudge, president of the council, is of the opinion that this portrait is by Valentine.

inscription, "The late Sir John Inglis, Bart., K. C. B., by Mr. Gush, 15 Stratford place", and it therefore must have been painted shortly after Inglis's death in September, 1862.

(12) Lieut.-governor, Lieut.-general Sir Hastings Doyle, K. C. M. G., by A. R Venables.—General Doyle was in office from 1867 to 1873, and was the last of our governors from England. In the background are the old king's and regimental colours of the Royal Irish fusiliers (the 87th), and Halifax in the distance. An inscription on the back of the picture is as follows: "No. 1, by A. R. Venables, 13 Berners st., [London]. Portrait of Lt.-General Sir Hastings Doyle, K. C. M. G., late lt. governor of Nova Scotia, painted for the houses of parliament of that province. The piece of plate and the casket in the background represent testimonials which were presented to Sir Hastings Doyle on his retiring from the goverment of Nova Scotia."

(13). Lieut-governor Joseph Howe, by Henry Sandham' R. C. A.—This hangs in the assembly chamber.

(14). Hon. Judge James W. Johnston (lieut.-governor elect), by Henry Sandham.—This is also in the assembly chamber.

Reference may also be made to the following two portraits which hung in the province building till a few years ago.

(1) Chief-justice Samson Salter Blowers, by J. P. Drake.—This portrait of the seventh chief-justice of the province (in office from 1797 to 1833), showing him in scarlet robes and wig, was painted in 1820 by Drake, probably a New England artist, who was then in Halifax, by vote passed in December 1819, by the quarter-sessions and grand jury of the town. It is inscribed by the artist " Painted by J. [or T.] P. Drake, 1820." Tradition says that some misunderstanding occurred between the artist and his clients, which led to ill-feeling, and when the former came to be paid he received the sum in halfpence in bags, and had to send a cart to convey it away. This picture long hung in the legislative council chamber, beside that of Chief-Justice Strange; then of late it was in one of the small committee-rooms of the house of assembly, and in January, 1909, it was, with the next mentioned portrait, lent by the government to the Nova Scotia barristers' society, to be hung in the supreme court-room of the county court-house at Halifax.

(2) Hon. S. G. W. Archibald, master of the rolls.—This portrait, a half-length, in black gown, was for many years the property of the provincial museum where it hung till December, 1899, when by direction of the deputy commissioner of works and

mines it was transferred to the executive council chamber, province building, and in January, 1909, was loaned with that of Blowers, to the barristers' society to be placed in the court-house where it now is. It is said that they afterwards suffered somewhat in being incautiously cleaned. The late curator of the museum gave me clearly to understand that Archibald's portrait was by our talented local artist, William Valentine, who was doing some of his best work about the period 1830-40, and several of whose portraits of scientific men are now in the provincial museum. Archibald's portrait has been shown at a recent art exhibition here, as from the brush of Sir Thomas Lawrence. It has no resemblance to the latter's work, and is in the style of Valentine, and until positive evidence to the contrary is shown, the ascribing of it to Lawrence must be considered as an error of the kind which is not infrequent in the case of pictures.*

Portraits by Valentine in museum.—This suggests that some notes on the portraits in the provincial museum may be of interest.

William Valentine, the most talented local portrait painter we have ever had (Robert Field a superior artist, practised here but a short time),† was born at Whitehaven, England, in 1798. He is reported to have been a relative (nephew or grand-nephew) and pupil of Field who died in 1819. Valentine came to Halifax in 1818, at the age of twenty; formed the firm of Bell and Valentine, painters, which was dissolved in May 1824; visited London for a short while for the purpose of study about 1836, and on his return to Halifax resided there until his death in 1849. His charges for portraits in 1837, were: £5 for 16x19 in. portraits, £10 for ¾ sizes, £15 for kitcats, and £30 for a half-length. He introduced the daguerreotype photographic process into Halifax.

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* While occupied with the pictures in the province building, I took occasion to examine the gilded royal arms that surmount the canopy over the state-chair in the legislative council chamber. They are the arms of Great Britain, quartering those of Scotland and Ireland, with those of the King's Germanic states on an escutcheon of pretence, and therefore are of the period of George III. after the union with Ireland in 1801, and most likely they had been erected when the province building was built in 1811-19. It is not probable that they had been used in the earlier assembly house in Cochrane's building.

†Robert Field, a better artist than Valentine, and an exhibitor at the Royal academy in London, practised in Halifax for but a few years. He was a native of England, who went to the United States about 1793, and worked in New York, Philadelphia, etc. He came to Halifax in 1808 and there is evidence that he continued to reside here as late as 1816 He was highly estimated for both his personal character and his artistic attainments, and he died in Jamaica in 1819 He painted portraits of very many prominent local men, such as Gov. Wentworth, Gov. Sir John Sherbrooke, Gov. Sir George Prevost, Bishop Charles Inglis (in the national gallery), John Lawson, Adam DeChezeau the elder, etc. Gilbert Stuart Newton, R. A., who died in 1835 at the age of 42, son of Henry Newton of Halifax, worked abroad.

A large number of his paintings of local personages are in existence, and are mostly of excellent merit. Five of his portraits are in the provincial museum, having been presented to it in trust by the Halifax mechanics' institute. These are:

(1) William Hyde Wollaston, M.D., (1766-1828), chemist and physicist, 23rd president of the Royal society of London (1820); after the original in the rooms of the Royal society.

(2) Sir Humphry Davy, Bart., (1778-1829), chemist and physicist, inventor of the safety-lamp, 24th president of the Royal society (1820-27); after the original by Sir Thomas Lawrence, P. R. A., in the rooms of the Royal society.

(3) Davies Gilbert, D. C. L., (1767-1839), antiquary, etc., 25th president of the Royal society (1827-30); after the original by Thomas Phillips, R. A., in the rooms of the society. Valentine's copy is very finely executed, particularly the head, and although not original it is the best work of Valentine's we have ever seen. The preceding three pictures were copied for the Halifax mechanics' institute by Valentine, when he was in London, doubtless in 1836.

(4) Hon. William Grigor, M. D., (1799?-1857), came to Halifax in 1819, the first president of the Halifax mechanics' institute on its foundation on 27 December, 1831. This is an original by Valentine, painted at the request of the mechanics' institute and presented to it by the artist in 1832.

(5) Andrew McKinlay, (1800-1867), also a president of the Halifax mechanics' institute, mayor of Halifax and custos of the county. An original by Valentine, painted for the mechanics' institute and with the other four portraits presented by the trustees to the provincial museum on its foundation in 1868.

Other portraits in museum.—Besides the foregoing paintings by Valentime, and a large number of photographs of notable persons connected with the province which are filed in drawers, the following local portraits are shown on the walls:

(1) Hon. Richard Bulkeley, (1717-1800), aide-de-camp to Governor Cornwallis in 1749, secretary of the province from 1757 to 1792, member of H. M. council for forty-five years and judge of the court of vice-admiralty for twenty-five years. This is a black-and-white crayon portrait (the only one of him in existence), and is said to have been drawn by himself by aid of a mirror.

(2) Rev. John Breynton, D. D., at the age of 78; chaplain of the royal navy, 1742, and the first rector of St. Paul's church, Halifax, 1753-91. This is a fine mezzotint by W. Barnard after the painting by L. F. Abbott. Miss Beatrice A. Hurst, of Horsham, Sussex, England, a descendent of Dr. Breynton, has an oil portrait of Breynton, which she states was "given by the people of Halifax as a token of affection and esteem", and which is doubtless Abbott's original.

(3) Admiral Marriott Arbuthnot, commissioner of H. M. naval yard at Halifax in 1775, and lieutenant-governor of Nova Scotia from 1776 to 1778. Engraved in stipple by H. R. Cook in 1810, after a painting by Rising. (See museum report for 1910.)

(4) Sir John Wentworth, Bart., (1713-1820), showing him in middle-age when governor of New Hampshire, 1767-75. A crayon copy of the painting by Tenney in the state-house at Concord, N. H., copied in turn from the original by John Singleton Copley at Portsmouth, N. H. (See report for 1902).

(5) Sir John Wentworth, showing him late in life, when lieutenant-governor of Nova-Scotia, 1792-1808. This is an excellent photograph of the fine portrait by Robert Field, painted about 1808, and now in government-house, Halifax.

(6) Hon. Charles Morris, formerly supposed to be the second of that name (1730?-1800). Original oil portrait, doubtless by Robert Field and therefore painted about 1808. As Charles Morris the second was dead when Field was here, it seems more probable that it is Charles Morris the third (1759?-1831). It represents a man apparently of about fifty years of age, with the "mutton-chop" whiskers and style of dress in vogue about 1800, which would tend to strengthen the idea of its being the third Morris. (See report for 1908).

(7) Anthony Henry Holland, (1785?-1830), founder of the "Acadian Recorder" newspaper, Halifax, in 1813, and a desendant of Anthony Henry one of the pioneer printers of this town. He also, about 1819, erected near Bedford the first paper-mill in the province. This is a coloured crayon portrait, of poor merit, by an unknown hand, but is valuable as a portrayal of a prominent journalist of his day.

(8) William B. Webster, M. D., M. P. P., of Kentville, N. S., (1797?-1861), collector of many mineral and fossil specimens now in the museum, which were presented by his widow. He was the discoverer of the fossil *Dictyonema websteri* which Dawson named in his honor in 1860. Photograph.

(9) Hon. William Garvie, Nova Scotian lawyer, journalist and politician, chief commissioner of public works and mines in 1871, who took a prominent part in advancing the welfare of the museum in its earliest years. This is a large oil portrait by Robert Harris, afterwards president of the Royal Canadian academy of arts, painted in 1873, when the artist was beginning his career, and presented by him to the museum.

(10) Lieut-Governor, Sir Hastings Doyle. Photograph presented by General Doyle in January, 1873.

Donors.—The following is a list of donors to the museum for the year 1911, numbering 38:

Almon (Albert), Glace Bay; Anderson (Robert D.), Halifax.

Bowman (Maynard), Halifax; Burchell (James T.), Sydney; Burke (J. D.), Halifax.

Cameron (L. H.), Port Hood; Cole (Harry E.), Stellarton; Cruikshank (H. S.), Truro.

Davison (Albert M.), Montrose, Colchester County; Donaldson (H. F.), Enfield, Hants County; Donkin (Hiram), Halifax.

Fultz (Bennett D.), Halifax.

Hayward (A. A.), Halifax; Huestis (George J.), Halifax.

Keddy (Charles), Lake Ramsay, Lunenbury County.

Leadley (F. W.), Woodside, Dartmouth.

McCallum (A. L.), Halifax; MacIntosh (Prof. D. S.), Halifax; Mackie (C. J.), Halifax; McNab (C. J.), Dartmouth; Mines Department of N. S., Halifax; Mitchell (Mrs. Jane), Hampton, Annapolis County; Moore (Prof. Clarence L.), Halifax; Mosher (W. H.), Dartmouth; Mylius (L. A.), Halifax.

Owen (Daniel), Annapolis Royal.

Perrin (Joseph), McNab's Island, Halifax; Piers (Charles), North West Arm, Halifax County; Prest (Walter H.), Bedford; Purcell (Lancelot A.), Dartmouth.

Reid (Dr. Frank H.), Middleton; Reyno (Frank), Herring Cove, Halifax County; Rood (W. E.), Halifax.

Stimers (Victor), Hartville, Hants County; Strathcona and Mount Royal (Rt. Hon. Lord), London, England.

Verge (R. E.), Truro.

Wier (Dr. J.), Doaktown, N. B.; Willis (John W.), Halifax.

SCIENCE LIBRARY.

Accessions.—The total number of books and pamphlets received by the Provincial Science Library from all sources during the calendar year 1911, was 3,088. Of these, 1,688 were received through the Nova Scotian institute of science, and 1,400 were accessions of the science library proper. Of the latter, 1,025 were non-society periodicals (mostly received through the technical college and the mines department) ; 224 were miscellaneous manuals, etc., received through the technical college ; 54 were miscellaneous transfers from the mines department ; 5 were transfers from the legislative library ; 15 were new parts of the *International catalogue of scientific literature;* and 77 were donations, mostly received from Professor R. R. Keely, late of the technical college, and others. No direct purchases were made, as we have no funds for that purpose.

The following summary gives the number of accessions received during the past eight years. Figures are not available for previous years :

YEAR	NUMBER OF BOOKS AND PAMPHLETS RECEIVED.		
	Science library proper	N. S. Institute of Science	Total.
1904	785	2330	3115
1905	679	1911	2590
1906	1079*	1756	2835
1907	729	1781	2510
1908	2064†	1697	3761
1909	450	1754	2204
1910	1611	1810	3421
1911	1400	1688	3088
Total, 8 years	8,797	14,727	23,524
Yearly average	1,099	1,841	2,940

*Includes 414 donations. †Includes 1,555 donations.

Number of volumes in the library.—The total number of books and pamphlets in the library on 31st December, 1911, was 45,497. Of these, 11,412 belong to the science library proper, and 34,085 to the institute of science. That is, about 25 per cent. are the property of the former, and about 75 per cent. belong to the society.

Books borrowed.—During the year, 642 books and pamphlets were borrowed, in addition to the many consulted in the library. A number of books have been loaned, through the post, to persons in various parts of the province. The following is a summary of the number of books borrowed since the opening of the institution in 1901:

YEAR	BOOKS BORROWED	YEAR	BOOKS BORROWED
1901	158	1907	607
1902	163	1908	381
1903	296	1909	431
1904	519	1910	626
1905	539	1911	642
1906	661		———
		Total, 11 yrs.	5,023

No books purchased or bound.—As there is still no grant for the library's use, we have again been unable to add any books by purchase, or to do any binding. The 224 manuals and other treatises received through the technical college, were a most welcome addition, but these books, which are chiefly on engineering and related subjects and have so helped to bring that department fairly well up to date, have not strengthened at all many other departments which a general scientific library like this should strive to keep abreast of the times. As a result, the library is becoming somewhat unbalanced as to subjects covered, a condition which we strongly endeavoured to avoid in the past. If the library's grant were restored, we would be enabled to strengthen the library in departments which are now being neglected and becoming out-of-date, for it is reasonable to expect that the technical college will only purchase books dealing with the particular subjects in which its activities lie.

Periodicals.—The following 31 non-society periodicals have been received and filed:

Title.	Place of Publication.	When Issued.	Source.
American mechinist	New York	Weekly	T. C.
American tailor & cutter.	“	Monthly	P.
Canada	London	Weekly	M. D.
Canadian engineer	Toronto	“	T. C.
Canadian machinery	“	Monthly	T. C.
Canadian mining journal.	“	Fortnightly	M.D. & T.C.
Canadian patent office rec.	Ottawa	Monthly	L. L. & I. S.
Chemical engineer	Chicago	“	T. C.
Economic geology	Lancaster, Pa.	Semi-qrtly.-	T. C.
Educational review	St. John	Monthly	P.
Electric railway journal	New York	Weekly	T. C.
Electrical world	“	“	T. C.
Electrician	London	“	T. C.
Engineering	,,	,,	T. C.
Engineering and mining journal	New York	“	M.D. & T.C.
Engineering & contracting	Chicago	“	T. C.
Engineering news	New York	“	T. C.
Engineering record	,,	,,	T. C.
Gentlemen's tailor (stopped April)	London	Monthly	P.
Industrial advocate	Halifax	“	P.
Labour gazette	Ottawa	,,	D.L. & M.D.
Ladies' tailor (stopped April)	London	,,	P.
Maritime mining record	Stellarton	Fortnightly	M. D.
Metallurgie	Halle-a.-S.	“	T. C.
Mines and minerals	Scranton	Monthly	T. C.
Mining & scientific press.	San Francisco	Weekly	T. C.
Mining journal	London	“	P.
Mining magazine	“	Monthly	T. C.
Nature	“	Weekly	P. M.
Power and the engineer	New York	“	T. C.
Power house	Toronto	Monthly	T. C.

[Source: D. L., Department of labour; I. S., Institute of science; L. L., Legislative library; M D., Mines department (for science library); P., publisher; P. M., Provincial museum; T. C., Technical college.]

Cataloguing.—Most of the manuals received during the year from the technical college have not yet been catalogued on cards, as there was no time for this work while the museum was being transferred and arranged, but they have been placed on shelves for use and lent when asked for. The accessioning and shelving of the society publications were kept up to date throughout the year. As the three accession-books, folio-size, for society publications, prepared in 1902, are again begining to become inadequate, we have ordered 5-by-8-inch cataloguing-cards and a three-tray cabinet, and when time permits will transcribe onto the cards the entries from the old books, after which current entries will be made on the cards. This will is a more expansive system than the use of books for this purpose.

As the twelve-tray standard card-cabinet in use for the catalogue of non-society publications, had became filled, a second cabinet of the same size was obtained.

Miscellaneous improvements.—During the summer the old pine book-shelving, cupboard book-cases and drawer-stands, removed from the old library, were grained and varnished to match the new shelving, so that the whole library now presents a uniform appearance (oak finish). It has also, during the year, had electric lamps placed at short intervals along the passages between the shelving, artificial light being sometimes required there during dark days as well as at night; and desk lamps have also been installed. This is in addition to the large ceiling lamps. As only such lamps are now switched on independately or in groups as are actually required, this effects a considerable saving in lighting expenses. Besides a large table for general work, a small desk has been obtained for the use of special readers consulting books in the stack-room and for cataloguing purposes; and reading chairs, with book-rests have been placed at convenient places. A library book-truck assists in lessening the labour of carrying large numbers of books from place to place among the cases, especially when they are being shelved.

I have the honour to be, Sir,

Your most obedient servant,

HARRY PIERS,

Curator and Librarian.

TABLES

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD)

COAL.

No. of Lease.	Owner.	County.	Address of Agent of Company.
188, 239, 240, 252, 253, 254, 256, 263, 265, 266, 267, 268, 269, 270, 271, 70/108, 71/110, 77/140, 387, 388, 389, 390, 391, 392, 426, 427, 428, 429, 430, 278, 279, 280, 20/66/60, 13/52/42, 14/60/54, 15/61/55, 16/62/56, 17/63/57, 19/65/59, 21/67/61, 22/68/62, 23/69/63, 11/50/40, 10/47/29, 9/46/28, 8/45/5, 322, 323, 373, 374, 375, 376, 377, 386, 409, 410, Lease applied for 30/8/04 .... " " " 30/8/04 .... " " " 30/8/04 .... .. " " " 29/6/07 .... " " " 29/6/07 .... " " " 24/7/07	Dominion Coal Co., Ltd.	Cape Breton .	M. J. Butler, C. M. G., Sydney

4/13/79, 2/2/27, 3/3 G. M. A., 1/1/27, 5/28/G.M.A., 6/29/G. M.A., 7/30/G.M.A., 325, 326, 327, 328, 329, 330, 334, 335, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 453, 454, 455, 456, 457, 458	Nova Scotia Steel & Coal Co.	Cape Breton	Thos. J. Brown, Sydney Mines
131, 135, 144, 171, 174, 182, 186, 187, 192, 200, 202, 205, 206, 209, 212, 215, 217, 225, 226, 229, 231, 233, 234, 243, 281, 295, 308, 309, 395, 319, 317, 318, 396, 394, 393.			
400,, 398, 399, 404, 406, 397			
311, 310, 405, 401, 402, 403			
Lease applied for 25/11/04			
" " " 6/1/05			
" " " 23/1/05			
" " " 24/1/05			
" " " 25/2/05			
" " " 27/2/05			
" " " 27/2/05			
" " " 11/3/05			

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD).

COAL.—(*Continued*).

No. of Lease.	Owner.	County.	Address of Agent of Company.
Lease applied for 7/7/05	Cape Breton Coal, Iron & Railway Co.	Cape Breton	McInnes, Mellish & Co., Hfx.
" " " 7/7/05			
" " " 7/7/05			
" " " 7/7/05			
" " " 5/8/05			
" " " 30/10/05			
" " " 10/11/05			
" " " 6/1/06			
" " " 6/4/06			
" " " 24/7/06			
" " " 8/9/06			
" " " 8/9/06			
" " " 20/9/06			
" " " 5/2/07			
" " " 9/7/08			
" " " 11/11/08			
" " " 26/8/03			
" " " 23/10/01, 17/3/02, 6/7/03			

73/112, 74/113, 75/114, 76/115, 141, 177, 213, 244, 283, 472, 473, 474, 475, 476, 477, 478, 480, 479, 493, 494, 495, 504, 505, 506	Cumb'land Ry & Coal Co. (Dom. Coal Co., Lessee)	Cape Breton	Dominion Coal Co., Lessee.
Lease applied for 13/5/11	W. A. MacKay	" "	
" " " 25/5/11	R. P. Scott	" "	
6 leases applied for 21/6/11	Dominion Coal Company	" "	
Lease applied for 6/7/11	A. C. Hawkins	" "	
24/49/53, 25/42/52	General Sir A. Moore	Cape Breton	....
484, Lease applied for 15/11/07	J. H. Emmett	Cape Breton	....
" " " 5/9/05	F. P. Ronnan	Cape Breton	....
169, 170, 183, 297	Jas. McVey	Cape Breton	James McVey, Sydney, N. S.
58/67, 173, 298, 299, 300, 301, 302 303, 304, 305, 306, 307, 378, 379, 380	Sir Robert L. Weatherbe.	Cape Breton	....
486, 487, 488, 489	Sydney Coal Co., Ltd	Cape Breton	A. G. Hamilton, North Sydney
Lease applied for 11/10/04	J. E. DeWolf	Cape Breton	....
246	A. G. Hamilton	Cape Breton	....
139, 492, 219	Estate of E. T. Moseley	Cape Breton	E. W. Moseley, Sydney, N. S.
490, 491	Samuel C. Bennett	Cape Breton	....
481, 482	MacKay Mining Co. Ltd	Cape Breton	W. A. MacKay, North Syd. N.S.
136, 138, 163, 184, 185, 199, 211, 236, 411	Lingan Coal Co., Ltd	Cape Breton	A. C. Ross, Sydney, N. S.

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD).

COAL.

No. of Lease.	Owner.	County.	Address of Agent of Company.
146, 193, 194, 216, 235, 312, 313, 314, 315, 381, 408 Leases applied for 11/4/05, 5/5/05 4/8/05, 26/1/06, 25/9/06, 2/11/06, 25/7/07, 26/7/10, 10/3/08, 9/4/08, 14/5/08, 14/5/08	North Atlantic Collieries.	Cape Breton	
175	Joseph McDonald	Cape Breton	
161, 196, 222, 237, 178.	T. Routledge et al	Cape Breton	W. Routledge, Reserve Mines
165, 167, 210, 218, 285	Isle Royale Coal Co., Ltd	Cape Breton	R. S. Cottrell, Sydney, N. S.
179, 180, 190, 208, 223, 284, 500, 501	Frank Roberts, et al	Cape Breton	R. H. Williams, Halifax, N. S.
Leases applied for, 17/9/03, 11/9/03, 11/3/05, 28/7/08	S. H. Holmes	Cape Breton	
201, 221	Estate, Cornelius Hickey	Cape Breton	
203, 224	A. J. White	Cape Breton	
72/214, 220	Colonial Coal Co.	Cape Breton	R. S. Cottrell, Sydney, N. S.
248	John McMillan, et al	Cape Breton	
Leases applied for 3/10/04, 24/7/05, 15/4/07, 20/10/04, 24/1/07.	A. H. Coppin	Cape Breton	Alfred Bennett, Halifax, N. S.

290	Alex. McDonald	Cape Breton	
291	D. A. McCuish, et al	Cape Breton	
293, 294, 321, Lease applied for 19/2/08	Estate M. A. McPherson et al	Cape Breton	
Lease applied for 25/7/02, 22/6/04	T. C. Harold	Cape Breton	T. C. Harold, Sydney, N. S.
Lease applied for 25/3/09, 502	M. W. Lawlor	Cape Breton	M. W. Lawlor, North Sydney.
Lease applied for 2/7/10	W. N. McDonald	Cape Breton	W. N. McDonald, Sydney.
Leases applied for, 20/10/22,/20/1/04, 19/4/04	Hugh McDonald	Cape Breton	Hugh McDonald, Sydney, N. S.
45, Lease applied for, 13/3/05	Estate, A. J. Manley	" "	
418, 419, 420, 421, 422, 423, 424, 425, 384, 413, 414, 415, 416, 417	J. Sydney Burchell	" "	J. S. Burchell, Sydney, N. S.
460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471	J. H. Plunner	" "	H. McInnes, K. C., Halifax.
495, 503	J. A. Johnson	" "	
Leases applied for, 11/3/02, 11/3/02	Estate, F. B. Wade	" "	
	IRON.		
191, 197	Estate, John McVicar	Cape Breton	A. G. McLean, Sydney, N. S.
232, 257	R. J. Brookman, et al	" "	E. W. Moseley, Sydney, N. S.
258, 316	Estate, M. A. McPherson, et al	" "	Jos. McPherson, North Sydney N. S.
483	Neil L. Nicholson, et al	" "	
282, 324, Lease applied for 5/9/05	Edgar L. Moseley	" "	E. W. Moseley, Sydney, N. S.
289	Isabella Watson, et al	" "	

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD).

IRON.—(*Continued*).

NO. OF LEASE.	OWNER.	COUNTY.	ADDRESS OF AGENT OF COMPANY.
292	Wiley Smith	Cape Breton	
296	A. G. Hamilton, et al	“ “	
372	Alex. Matheson	“ “	
412	Phoebe Brookman, et al	“ “	E. W. Moseley, Sydney, N. S.
459 (Grapite)	C. McDougall	“ “	
	COPPER-LEAD.		
72/126 (Copper)	Alex. Matheson	“ “	
135A “	Roderick McKenzie	“ “	
142 “	Henry LeCras	“ “	
181 “	J. E. Burchell, et al	“ “	
228 “	John A. McKenzie, et al	“ “	J. A. McKenzie, Sydney, N. S.
250 70/95, 286, 287, 372, 106, (Copper)	Boston Holding Co	“ “	
277 (Talc.)	John O. Shares	“ “	
407 (Copper)	Wm. F. Jennison	“ “	
Lease applied for—Lead			
25/6/10	Angus J. Nicholson	“ “	

5/16/6, 6/17/7, 7/18/8, 8/19/44, 9/20/52, 10/21/55, 15/58, 16/59, 17/60, 18/61A, 27/62, 23/71, 24/73, 25/75, 76, 26/77, 80, 82, 83, 84, 89, 90, 94, 108, 110, 111, 112, 114, 115, 117, 121, 122, 123, 124, 135, 137, 138, 142, 143, 144, 145, 146, 147, 149, 150, 151, 152, 153, 154, 155, 169, 170, 171, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 196, 221A, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 231A, 232A, 233A, 234A, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 299, 300, 19/66, 20/67, 21/68, 22/69, 125A, 126, 128, 129, 255.	Cumberland Ry. & Coal Co (Dom. Coal Co., Lessee). .	Cape Breton. .	Dominion Coal Co. Glace Bay, N. S.
Lease applied for 19/8/10..........	....	....	....
11/9/22, 12/10/23, 13/11/28, 14/12/29, 15/13/30..........	Styles Mining Co.........	Cumberland. .	R. C. Fuller, Amherst.

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD).

COPPER-LEAD.—(*Continued*).

No. of Lease.	Owner.	County.	Address of Agent of Company.
Lease applied for 3/8/05, 195, 215, 216, 217, 218	Eastern Coal Co.	Cumberland.	
211, 212, 213, 225A	Strathcona Coal Co.	"	F. A. McCully, Moncton, N.B.
1/24/47, 227A	Boston Coal Mining Co.	"	J. R. Needham, Boston, Mass.
4/26/16, 226A	Minudie Coal Co., Ltd.	"	H. McCarthur, River Hebert.
86	John Rutherford	"	J. Rutherford, Halifax, N. S.
104, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 176, 213A, 219, 220, 197, 198, 199, 200, 201	Mar. Coal, Ry. & Pow. Co.	Cumberland.	David Mitchell, Maccan, N. S.
Lease applied for 3/12/06	Saul Smith, et al	Cumberland.	
125	George E. Francklyn	"	Geo. E. Francklyn, Hfx., N. S.
131	T. S. Rogers, et al	"	
140, 141	Atlantic Grindstone Coal & Railway Co.	Cumberland.	James Baird, Lower Cove, N.S.
284, 285	Francis Burrows	"	
172	Chas. J. Stewart	"	
173	U. J. Weatherbe, et al.	"	
221, 228A, 229A, 230A	Bessie M. Hickman	"	Bessie Hickman, Amherst, N.S.
Lease applied for 28/10/05	W. B. McDonald	"	

Leases applied for 27/10/06, 27/10/06, 27/10/06, 2/6/05, 25/11/05, 17/5/07	George Irving	Cumberland	
256-copper	Colonial Copper Co	Cumberland	
Lease applied for 2/8/11-copper	Edward Gillispie	“	
233, 240, 241, 130, 127, 205, 25, 18, 41, 40, 4/3/11, 155, 156, 104, 215, 214, 212,.211, 216, 217, 206, 207, 208, 209, 210, 15, 24, 250, 147, 218, 101, 105, 160, 243, 161, 149, 242, 148, 60, 158, 159, 157, 235, 234, 146, 253, 213, 11	Inverness Ry. & Coal Co.	Inverness	H. A. McLeod, Inverness, N. S.
1/1/13, 2/6/4, 3/7/10, 30, 19, 20, 26, 29, 111, 112, 113, 150.	Pt. Hood Rich. Ry.-C. Co.	“	R. J. Law, Port Hood, N. S.
4/8, 5/9, 106, 107, 114, 115, 116, 117, 118, 119, 120, 121, 220, 221, 222, 323, 248	Eastern Trust Co.	“	A. A. MacKay, Halifax, N. S.
Lease applied for, 17/9/08	T. F. Courtney	“	T. F. Courtney, Halifax, N. S.
32, 33, 34, 42	Thomas A. Wallace.	“	
35, 38, 39, 43, 44, 67, 68, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 63, 64, 65, 96, 97, 98	E. L. Thorne, Trustee	“	
66, 108, 109, 154	J. C. Lithgow, et al	“	
69	Hector McInnes, et al	“	
76	Silas Townsend Estate	“	G.F.S.Townsend, Halifax, N.S.
82, 85, 88	J. W. Andrews	“	
83, 84, 86, 87, 89, 90, 91, 92, 93 94, 95	C. E. Sherman,	“	

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD).

COPPER-LEAD.—*Continued*).

NO. OF LEASE.	OWNER.	COUNTY.	ADDRESS OF AGENT OF COMPANY.
110	Thos. Caldwell, et al	Inverness	T. Caldwell, Halifax, N. S.
128, 129	National Trust Co., Ltd.	"	McInnes, Mellish and Co., Halifax, N. S.
142, 219	Thos. F. Tobin	"	
143, 144, 151, 152, 153	Dominion Coal Co.	"	M. J. Butler, C.M.G., Syd., N.S.
222A, 223A, 224, 225	Wm. Roche	"	
244, Lease applied for 8/4/07	Wm. McKenzie	"	McInnes, Mellish and Co., Halifax.
245, 246, 247	W. H. Johnson, et al	"	W. H. Johnson, Halifax, N. S.
262, Lease applied for 8/7/07	L. B. McMillan	"	
226	J. H. Emmet	"	J. H. Emmet, Halifax, N. S.
227, 228	W. B. McDonald	"	W. B. McDonald, Hfx., N. S.
Lease applied 2/8/04 (Copper)	Cheticamp Gold Mining Co.	"	
249	P. A. Doyle, et al	"	
Lease applied for 5/5/05 (Barytes)	Ainslie Mine. & Ry. Co.	"	
117/46, 118/68	N. S. Steel & Coal Co.	Pictou	T. Cantley, N. Glasgow, N. S.
116/66, 96, 97, 98, 99, 2/5/12, 3/6/13, 4/7/14	Interclonial Coal Co.	Pictou	Jas. Floyd, Westville, N. S.
117	Acadia Coal Co.	"	Geo. Gray, Pictou, N. S.
100. Lease applied for 7/12/10.	Pictou Coal Mining Co.	"	

101	M. H. Richey—Estate	Pictou	
83, 84, 85	Estate of A. McG. Barton	"	Wm. Roche, Halifax, N. S.
116	W. H. Huggins	"	
	IRON		
104/47, 105/48, 106/49, 107/51, 108/52, 109/53, 110/54, 111/55, 112/56, 113/57, 114/58, 115/59, 87, 93/44, 103	Jas. H. Bartlett	"	Ritchie & Robertson, Halifax, N. S.
58/118	N. S. Steel & Coal Co.	"	T. Cantley, N. Glasgow, N.S.
88, (Copper)	American C'adian Min'g Co.	"	
89, "	Hiram W. Yuill	"	
	COAL		
35, 43	Dominion Coal Co.	Richmond	M. J. Butler, C.M.G., Sydney N. S.
Lease applied for, 2/7/02	C. M. B. Manley	"	
" " " 7/10/07	H. M. Pearl	"	
34, 39, 40, 41, 42	Wm. Ross et al	"	
11, 31, 33, 37	Richmond Coal Co.	"	H. M. Pearl, Prt. Malcolm, N.S.
64	John H. Emmet	"	J. H Emmet, Halifax, N.S.
7	Terminal City Co.	"	
45	Estate A. J. Manley	"	
56, Lease applied for, 28/3/08, 28/3/08	Canadian Consolidated Coal Co.	"	H. M. Pearl, Port Malcolm, N. S.

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD).

IRON-COAL.

No. of Lease.	Owner.	County.	Address of Agent of Company.
	IRON		
66	J. R. G. Crispo	Richmond	J. R. G. Crispo, Stittsville, Ontario.
Lease applied for 13/4/09	F. C. Stevens	"	
" " " 21/9/11	F. W. Bissett	"	
" " " 16/6/06	Duncan Finlayson	"	
	COAL		
1/1/2, 31, 32, 33, 15, 17, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28	Ass'ted Newspapers, Ltd.	Victoria	Pearson & Covert, Hfx, N. S.
11, 12, 29, 30	N. S. Steel & Coal Co., Ltd.	"	Thomas J. Brown, Sydney Mines, N. S.
7, 8	Dominion Coal Co	"	M. J. Butler, C. M. G., Sydney N. S.
9, 10, (Lead)	Henry C. Corson	"	H. C. Corson, Akron, Ohio.
14, 15, "			
34, (Copper)	Neil J. McKinnon	"	
21, 22	T. J. Sears et al	Antigonish	

6, 12, Lease applied for 2/7/10	Eastern Trust Co.	Colchester	Eastern Trust Co., Hfx., N. S.
Lease No. 14, 15	Colchester Coal & Ry Co.	Colchester	E. A. Reilly, Moncton, N. B.
Leases applied for, 24/4/08, 24/4/08, 7/5/08, 7/5/08, 7/5/08, 7/5/08, 7/5/08, 7/5/08, 7/5/08, 7/5/08	A. Hobrecker, et al.	Antigonish	A. Hobrecker, Hfx, N. S.
Lease applied for 28/12/07	S. H. Holmes	Antigonish	
3	W. J. Murdoch	Hants Co	
1/1, 2/2, (Iron)	N. S. Steel & Coal Co.	Guysboro	T. Cantley, N. Glasgow, N. S.
Leases applied for 17/7/05, 21/1/05, 21/1/05, 14/12/05, (Iron)	A. H. Learment, et al.	Colchester	
Lease applied for, 25/9/05 (Copper)	Martin McDonald	"	
" " " 15/7/11 (T'gsten)	A. A. Hayward	Halifax	
" " " 31/1/11 (Tin)	Samuel K. Hamilton	"	
" " " 29/4/07, 8/3/09, (Iron)	C. B. Coal, Iron & Ry Co	Antigonish	
8, 9, 10, 11 (Iron)	Estate, G. B. Cowlan, et al.	"	C. C. Whidden, A'gnish, N. S.
14, 18, 19, 20 "	Charles N. Wilkie	"	
16A, "	James Mahoney	"	J. W. Keith, Stellarton, N. S.
7, "	Nathaniel Curry, et al	Colchester	N. Curry, Amherst, N. S.
6, "	H. A. Archibald	Port Hastings	
7, "	Geo. E. Corbitt	Antigonish	
Lease applied for (Iron) 20/5/08	John C. Miller, et al	Halifax	
16A, (Iron)	Workingman's prospecting Developing & Mining Co.	Antigonish	
16, (Copper)	H. H. McKay	"	
Lease applied for, 2/8/11 (Copper)	Edward Gillispie	Colchester	
" " " 14/4/06 (Lead)	R. B. Kirk	Guysboro	

LEASES GRANTED AND LEASES APPLIED FOR (OTHER THAN GOLD).

IRON-COAL.

No. of Lease.	Owner.	County.	Address of Agent of Company.
1/2, 2/3, (Lead)	Geo. E. Francklyn, et al.	Colchester	G. E. Francklyn, Hfx., N. S.
5, 16, (Copper)	Lake Copper Mg. Co.	Antigonish	
8, 11, "	Estate, T. K. Jenkins, et al.	Colchester	Eastern Trust Co.
4, 5, (Antimony)	N. S. Mines Dev'l'ment Co.	Hants	A. Hobrecker, Halifax, N. S.
6, 7, (Tungsten)	John A. Reynolds, et al	Halifax	J. A. Reynolds, Moose River
Lease applied for, 31/1/11, (Tin)	Watson L. Bishop	Lunenburg	
" " " 3/3/11, (Lead)	Honor Hirschfield	Guysboro	

COAL.—GENERAL STATEMENT.

1911	Production	Sales	Colliery Consumption	
			Engines	Workmen
1st Quarter.....	1,526,558	1,373,128	124,886	27,070
2nd "	1,402,539	988,122	131,061	35,578
3rd "	1,592,508	1,447,509	122,647	17,975
4th "	1,686,839	1,747,705	116,715	13,954
Total........	6,208,444	5,556,464	495,309	94,577

COAL.

Production and Sales by Companies, Nova Scotia, year ended September 30th, 1911.

NAME OF COMPANY.	Output Tons.	Sales Tons.	Per Cent.	Colliery Consumption Tons.	Per Cent.	Supplied Workmen Tons.	Per Cent.	Supplied Locomotives Tons.	Per Cent.	Total per cent. of output.	Reported Usalable.	Tons in Bank at close of year.	Increase or Decrease on Bank Tons.
Dominion Coal Co., Ltd	3892958	3545784	91.1	219743	5.7	43695½	1.12	20994½	0.54	98.4	.....	112357	Increase 11898
Nova Scotia Steel & Coal Co., Ltd.	757823	695818	91.8	29960¾	4.0	17928½	2.37	3504½	0.46	98.6	......	38698	" 10611¼
Cumberland Railway & Coal Co., Ltd.	191849	139765	72.8	38238	19.9	4155	2.2	2919	1.52	96.4	...	6788	" 6772
Acadia Coal Co.	466337	372900	80.0	74909	16.1	9803	2.1	1236	0.27	98.5	......	20088	" 7484
Maritime Coal Railway & Power Co.	163763¾	143713¾	87.7	16664½	10.2	3010½	1.8	1284	0.78	100.0	......	....	
Inverness Railway & Coal Co.	291587	268722	92.2	18125	6.2	5371	1.8	9264	3.18	100.0	......	3331	Decrease 631
Intercolonial Coal Co.	261607	239300	91.5	33972	13.0	6508	2.5	716	0.27	100.2	......	9859	" 18889
Sydney Coal Co.	3687	3363	91.2	86	2.3	137	3.7	....	....	97.2	......	366	Increase 101
MacKay Colliery	29081	27199	93.5	1685	5.8	411	1.4	....	...	100.0	.....	....	Decrease 214
North Atlantic Collieries Co	47992	35772	74.5	8652	18.0	1102	2.3	....	....	94.8	2407	2806	Increase 59
Port Hood Coal Co.	41192	33956½	82.4	7855	19.1	1125¾	2.7	....	....	100.0		265	Decrease 1745½
Minudie Coal Co.	54481	46134	84.7	2786	5.1	1131	2.1	198	0.36	92.0	4430	....	
Atlantic Grindstone & Coal Co.	334	279	83.5	22	6.6	33	10.2	....	....	100.0	......	....	
Colonial Mining Co.	4485	3140	70.2	1932	43.1	126	2.8	....	....	100.0	......	....	Decrease 713
Great Northern Coal Co.	1267	618	49.0	543	42.8	35	2.8	....	....	94.6	.....	71	Increase 72
	6208444	5556464	89.5	455173	7.2	94577	1.52	40136	0.64		6837	194629	Increase 14805

COAL.

Coal Sales by Counties, Year ended September 30th, 1911.

	CAPE BRETON.	PICTOU.	CUMBERLAND.	INVERNESS.	TOTALS.
Nova Scotia, By Land	1,263,795½	386,556	60,239¾	81,544½	
Nova Scotia, By Sea	224,954¼	6,866	20,370	64,339¾	
Nova Scotia, Totals	1,488,749¾	393,422	80,609¾	145,884¼	2,108,665¾
New Brunswick	244,973¾	82,786	182,843¼	30,988	541,591
Newfoundland	181,400			2,795¼	184,195¼
Prince Edward Island	36,153	26,669		17,815	80,637
Quebec	1,841,418¼	99,065	47,019¼	80,329	2,067,831½
United States	307,796	560	18,908	5,037	332,301
St. Pierre	9,024½				9,024½
Bunker	179,778	8,724	1,130	15,049	204,681
Time-Charter Boats	19,787	974		4,784	25,545
Other Countries	1,992				1,992
	4,311,072¼	612,200	330,510¼	302,681½	5,556,464

PRODUCTION OF COAL BY COUNTIES.

County	Production 1910	Production 1911	Per cent	
			Increase	Decrease
Cumberland.....	277,862	411,695	48.2%	
Pictou...........	630,049	727,944	15.5%	
Inverness....	364,104	332,779		8.6%
Cape Breton......	4,2 5,131	4,736,026	12.6%	
	5,477,146	6,208,444	13.4%	

Number and classes of Workmen employed at each mine in Nova Scotia, Year ended September 30th, 1911

Company	Underground				Surface				Construction			Totals		Horses		Pit Days
	Skilled Labor	Laborers	Boys	Days	Skilled Labor	Laborers	Boys	Days	Skilled Labor	Laborers	Days	Persons	Days	Above	Below	Worked
Dominion Coal Co.	2729	1565	269	1339746	526	380	61	255469	......	......	......	5530	1595215	85	514	269
Nova Scotia Steel & Coal Co.	1050	803	205	530896	146	205	33	111816	......	......	......	2442	642712	4	110	274
Cumberland Railway & Coal Co.	259	296	32	168883	87	120	5	62672	2	2	838	803	232393	18	40	293
Acadia Coal Co	343	354	82	251538	90	275	1	136940	......	......	......	1163	388478	31	47	291
Intercolonial Coal Co.	349	152	84	149756	92	114	26	57732	1	1	499	819	207987	12	33	295
Mar. Coal Ry & Power Co., Joggins	269	83	7	106124	21	49	11	24086	......	......	......	440	130210	6	12	293
Inverness Railway & Coal Co.	312	130	21	137725	42	43	11	29161	......	......	......	559	166886	6	28	297
Mar. Coal Ry & Power Co., Chignecto	29	8	3	10357	6	5	2	3224	......	......	......	53	13581	1	1	174
Sydney Coal Co.	6	2	......	1759	1	2	....	694	1	3	64	15	2517	1	1	168
MacKay Mining Co.	36	13	......	14506	5	8	....	4174	1	3	254	66	18934	3	3	293
North Atlantic Collieries	70	29	16	32623	12	32	7	13477	......	......	......	166	46099	7	13	266
Port Hood Coal Co.	196	37	5	22872	15	21	3	9973	......	......	......	277	32845	4	5	183
Great Northern Coal Co.	4	1	......	1099	1	2	....	688	2	1	662	11	2449	......	......	67
Minudie Coal Co.	92	16	15	31114	14	14	4	9504	1	......	440	156	41058	3	1	246
Atlantic Grindstone & Coal Co.	2	......	......	288	2	......	....	380	......	......	......	4	668	......	......	102
Colonial Coal Co.	9	2	......	3249	4	2	1	1868	......	......	......	18	5117	1	2	300
	5755	3491	739	2802534	1064	1272	183	721858	8	10	2757	12522	3527149	182	810	......

COAL.

NOVA SCOTIA EXPORTED TO THE UNITED TTATES.

YEARS.	TONS.	DUTY.	YEARS.	TONS.	DUTY.
1850	118,173	24 ad.	1879	51,641	·75
1851	116,274	“	1880	123,423	“
1852	87,542	“	1881	113,728	“
1853	120,764	“	1882	99,302	“
1854	139,125	Free	1883	102,755	“
1855	103,222	“	1884	64,515	“
1856	126,152	“	1885	34,483	“
1857	123,335	“	1886	66,003	“
1858	186,743	“	1887	73,892	“
1859	122,720	“	1888	30,198	“
1860	149,289	“	1889	29,987	“
1861	204,457	“	1890	50,854	“
1862	192,612	“	1891	25,431	“
1863	282,775	“	1892	13,883	“
1864	347,594	“	1893	16,099	“
1865	465,194	“	*1894	79,837	.40
1866	404,252	“	†1895	73,097	“
1867	338,492	$1.25	‡1896	174,919	“
1868	228,132	“	‖1897	106,279	.67
1869	257,485	“	1898	98,027	“
1870	168,180	“	1899	153,188	“
1871	165,431	“	1900	624,273	“
1872	154,092	·75	1901	591,086	“
1873	254,760	“	1902	751.382	“
1874	138,336	“	1903	968,832	“
1875	89,746	“	1904	713,170	“
1876	71,634	“	1905	652,538	“
1877	118,216	“	1906	769,775	“
1878	88,495	“	1907	616,312	“
			1908	499,634	“
			1909	324,786½	“
			1910	290,668	“
			1911	332,301	“

NOTE —The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably underestimated.

*Nine months only.

†NOTE.—After August 1st, 1894, duty on Round Coal, 40 cents, on Culm and Slack, 15 cents.

‡Fiscal year begins Oct. 1st, and ends Sept. 30th. (Chap. 4, Acts 1893).

‖ On July 24th, 1897, the duty was made 67 cents.

(NOVA SCOTIA COAL SALES 1785 TO 1911 INCLUSIVE)

Year.	Sales.	Total.	Year.	Sales.	Total.
1785	1,668		1851	139,470	Forward, [illegible],741,948
1786	2,000		1852	158,076	
1787			1853	217,416	
1788			1854	234,812	
1789	10,681		1855	238,215	
1790		14,349	1856	253,492	
1791	2,970		1857	294,193	
1792	2,143		1858	226,725	
1793	1,926		1859	270,293	
1794	4 405		1860	322,593	[illegible],099,319
1795	5,370		1861	326,426	
1796	5,249		1862	305,637	
1797	6,030		1863	429,351	
1798	5,918		1864	570,935	
1799	8,947	51,048	1865	635,186	
1800	8,400		1866	558,523	
1801	5,755		1867	471,185	
1802	7,769		1868	453,624	
1803	6,601		1869	511,795	
1804	5,976		1870	568,277	4,927,339
1805	10,130		1871	596,418	
1806	4,038		1872	785,914	
1807	5,119		1873	118,106	
1808	6,616		1874	749,127	
1809	8,919		1875	706,795	
1810	8,609	70.452	1876	634,200	
1811	8,516		1877	697,666	
1812	9,570		1878	693,511	
1813	9,744		1879	688,628	
1814	9,866		1880	954.659	7,317,430
1815	9,336		1881	1,035,014	
1816	8,619		1882	1,250,176	
1817	6.284		1883	1,297,523	
1818	7,920		1884	1,261,650	
1819	8,692	1 ,527	1885	1,254,510	
1820	9.930		1886	1 373,666	
1821	11,308		1887	1,519,684	
1822	7.512		1888	1,576,692	
1823			1889	1 555,107	
1824	27,000		1890	1,786,111	13,810,136
1825			1891	1,849,945	
1826	,600		1892	1,752,934	
1827	2,149		*1893	1,485,914	
1828	20,967		†1894	2,019,742	
1829	21,935		1895	1,831,357	
1830	27,269	140,820	1896	2 047.133	
1831	37,170		1897	2,013,421	
1832	50,362		1898	2,13 ,397	
1833	64,743		1899	2,419,137	
1834	50,813		1900	2,997,546	20,552,526
1835	56,434		1901	3,119,335	
1836	107,593		1902	3 898,626	
1837	118,942		1903	4,621,074	
1838	106,730		1904	4,544,609	
1839	145,962	839,954	1905	4.475,284	
1840	101,198		1906	5.194,590	
1841	148 298		1907	5,046,690	
1842	129,708		1908	5,485,583	
1843	105,161		1909	4 615,713	45,898,400
1844	108.482		1910	4,896,896	
1845	150.674		1911	5,556,464	
1846	146 506				
1847	201.650				
1848	187,643				
1849	174,592				
1850	180,084	,533,798			

SUMMARY.

1785 to 1790	14,349
1791 to 1800	51,048
1801 to 1810	70,452
1811 to 1820	91,527
1821 to 1830	140,820
1831 to 1840	839,954
1841 to 1850	1,533,798
1851 to 1860	2.399,319
1861 to 1870	4.927,339
1871 to 1880	7,317,430
1881 to 1890	13.910,136
1891 to 1900	20.552,526
1991 to 1910	45,898,400

*Nine months only. †Fiscal year begins Oct. 1st and ends Sept. 30th. (Chap. 4, Acts, 1893).

GOLD—GENERAL ANNUAL STATEMENT.

YEAR.	Material Crushed.	TOTAL GOLD EXTRACTED.		
		Oz.	Dwt.	Gr.
1862	6473	7275	0	
1863	17020	14001	14	17
1864	21434	20032	18	13
1865	24423	25454	4	
1866	32162	25204	13	2
1867	31386	27314	11	11
1868	32262	20541	6	10
1869	35147	17868	0	19
1870	30829	19866	5	5
1871	30791	19227	7	4
1872	17093	13094	17	6
1873	17708	11852	7	19
1874	13844	9140	13	9
1875	14810	11208	14	19
1876	15490	12038	13	18
1877	17369	16882	6	1
1878	17990	12577	1	22
1879	15936	13801	8	10
1880	14037	13234	0	4
1881	15556	10756	3	2
1882	12081	14107	13	20
1883	25954	15446	9	23
1884	25147	16059	8	17
1885	28890	22202	12	20
1886	29010	23362	15	13
1887	22280	21211	7	18
1888	36178	22407	13	10
1889	39160	26155	6	13
1890	42749	24358	9	9
1891	35212	23391	0	0
1892	33633	21080	3	18
*1893	28040	14030	5	7
1894	39333	14980	7	13
1895	58082	22112	7	21
1896	65873	25596	14	6
1897	76559	26579	19	21
1898	86331	31104	17	10
1899	104022	27772	12	3
1900	65744	30399	4	14
1901	87992	30537	14	0
1902	192076	28279	5	13
1903	92645	25198	4	18
1904	62616	14279	8	14
1905	71725	15549	14	6
1906	64495	13048	0	12
1907	64657	13687	6	20
1908	59664	11811	15	0
1909	59058	12597	12	13
1910	49355	10325	19	1
1911	18128	7990	15	7
	2098531	927037	14	21
(Not included in above table).				
Gold extracted or contained in Stibnite ore shipped from West Gore,	1905 527	1232	16	23
	1906 783	1031	13	11
as by returns contained elsewhere in this report.	1907 1403	1319	18	12
	1908 133	179	5	0
(Concentrates)	1910 203	350	4	15
(Concentrates)	1911 191	398	16	21
	2101771	931550	10	7

*Nine months only

PRODUCTION OF GOLD FROM 1862 TO 1911.

District.		Tons Crushed	Total Yield of Gold			Average Yield of Gold the Ton.			Value at $19 an Oz.
			Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	
*Caribou and Moose River		217647	58881	3	6	....	5	9	$ 118742
Montagu		29523	42173	3	6	1	8	14	801290
Oldham		58421	67215	17	22	1	3	0	1277102
Renfrew		58411	47325	17	19	....	16	5	899192
Sherbrooke		300213	153090	1	4	....	10	5	2908711
Stormont		52 974	119743	15	13	....	4	14	2275132
Tangier		60262	27069	6	19	....	9	0	514317
†Uniacke		63341	43982	19	17	....	13	21	835677
Waverley		155520	69980	10	16	....	9	0	1329630
‖Brookfield		93527	38709	2	2	.....	8	7	735473
‡Salmon River		118819	41852	5	20	....	7	1	795193
‖Whiteburn		6907	9800	0	2	1	8	9	186200
§Lake Catcha		28065	27306	11	17	....	19	11	518825
¶Rawdon		12189	9606	5	10	....	15	18	182519
Wine Harbor.		77396	34992	15	11	....	9	1	664863
**Fifteen Mile Stream		36878	17363	0	5	....	9	10	329897
Malega Barrens		22926	20305	12	6	....	17	17	385806
Other Districts		42987	74764	17	14	....	10	11	1420534
		2004006	904163	6	7	....	9	1	17179103
Not includ d in above table; Gold extracted from or contained in Stibnite ore shipped from West Gore.	1905	527	1232	16	23	2	6	19	23424
	1906	783	1031	13	11	1	6	8	19602
	1907	1403	1319	18	12	....	18	19	25078
	1908	133	179	5	0	1	6	23	3406
From Concentrates	1910	203	350	4	15	1	14	12	6654
" "	1911	191	398	16	21	2	1	18	7578
Total		2007246	908676	1	17	....	9	1	$ 17264845

*From 1869. †From 1868. ‡From 1883. ‖From 1887. §From 1882. ¶From 1887. **From 1883.

GENERAL GOLD STATEMENT—*Year ended September 30th, 1911.*

District.	Tons Crushed.	Total Yield of Gold			Average Yield of Gold the Ton		
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	5733	2615	2	19	......	9	2
Tangier	5202	1746	13	0	......	6	17
Caribou	754	850	4	18	1	2	13
Caribou (Moose River)	651	245	5	14	....	7	13
Oldham	395	278	19	1	......	14	2
Renfrew	3493	1527	....	......	.....	8	18
Gold River	49	45	4	5	......	18	11
Lake Catcha	863	320	5	8	......	7	10
Carleton	48	36	15	2	......	15	8
Fifteen Mile Stream	242	155	7	......	.....	12	20
Fifteen Mile Brook	250	25	15	......	......	2	1
Kemptville	25	16	6	......	......	13	1
Malaga Barrens	233	69	14	12	......	5	23
Montagu	41	24	2	......	......	11	18
Sherbrooke (Mortared)	....	3	9	......	....	....	......
Shiers Point	14	7	6	......	.....	10	10
Wagamatook	125	23	4	......	....	3	17
Uniacke	10	......	2	......	....	......	5
	18128	7990	15	7	.....	8	20
West Gore. Gold contained in concentrates	191	398	16	21	2	1	18
Total	18319	8389	12	4	......	9	4

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

MONTH.	STORMONT.					TANGIER.				
	No. of Mines.	Tons Crushed	YIELD OF GOLD.			No. of Mines.	Tons Crushe	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
1910										
October	1	85	22	8	......	......	......	No Crushing		
November	3	368	170	9	......	1	200	51	......	......
December	1	300	60	11	......	1	600	101	......	......
1911										
January	2	500	1525	10	......	1	800	259	10	......
February	1	580	176	9	......	1	800	263	......	......
March	1	500	108	18	......	1	750	311	......	......
April	1	200	60	10	5	1	750	228	......	......
May	1	700	145	15	10	......	......	......	......	......
June	1	550	124	17	14	1	600	245	1	......
July	1	650	105	2	19	1	690	283	5	......
August	1	700	57	19	......	1	12	4	17	......
September	1	600	56	11	19	......	......	No Crushing		
Total	......	5733	2615	2	19	......	5202	1746	13	......

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

Month.	Gold River					Lake Catcha				
	No. of Mines.	Tons Crushed	Yield of Gold.			No. of Mines.	Tons Crushed	Yield of Gold		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
1910										
October	No Crushing		......	......	......	......	No Crushing		7	0
November	No Crushing		......	......	......	2	197	46	8	0
December	No Crushing		......	......	......	1	39	50	19	0
1911										
January	No Crushing		......	......	......	1	238	66	18	0
February	No Crushing		......	......	......	......	......	......	13	8
March	No Crushing		......	......	......	1	220	59	......	......
April	1	19	8	6	10	1	169	96	......	......
May	1	11	19	9	14	......	No Crushing		......	......
June	1	19	10	16	0	......	No Crushing		......	......
July	1	5	6	12	5	......	No Crushing		......	......
August	No Crushing		......	......	......	......	No Crushing		......	......
September	No Crushing		......	......	......	......	No Crushing		......	......
Total	......	49	45	4	5	......	863	320	5	8

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

MONTH.	CARIBOU.					CARIBOU (MOOSE RIVER).				
	Number of Mines	Tons Crushed	YIELD OF GOLD.			Number of Mines	Tons Crushed	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
1910										
October	1	10	No	Clean	up	4	75	20	17	....
November	1	35	7	.....	....	3	30	13	2	12
December	1	9	37	8	....	......	....	No	Crushing	
1911										
January	1	27	22	4	......	....	....	No	Crushing	
February	1	89	105	8	......	....	....	No	Crushing	
March	1	47	63	7	....	......	....	No	Crushing	
April	1	54	72	8	......	....	......	No	Crushing	
May	1	49	58	3	......	1	203	59	4	2
June	1	44	61	9	.....	1	21	7	14	....
July	1	110	113	7	14	2	195	52	16	......
August	1	190	252	9	19	2	33	28	10	......
September	1	90	57	......	9	1	94	63	2	.....
Total		754	850	4	18		651	245	5	14

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

Month.	Oldham.					Renfrew.				
	Number of Mines	Tons Crushed	Yield of Gold.			Number of Mines	Tons Crushed	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
1910										
October	2	47	31	9	......	1	330	141	10	....
November	4	116	87	15	1	1	380	117	12	....
December	1	Clean	up 25	2	......	1	245	64	16	......
1911										
January	No	Crush	ing	......	......	1	116	55	19	......
February	No	Crush	ing	....	......	1	290	145	.....	......
March	No	Crush	ing	......	......	1	310	161	8	......
April	No	Crush	ing	......	......	1	349	154	15	....
May	No	Crush	ing	....	....	1	360	162	12	......
June	No	Crush	ing	....	....	1	333	149	......	......
July	3	81	43	7	......	1	255	141	15	......
August	3	47	18	10	....	1	250	120	18	....
September	2	104	72	16	....	1	275	111	15	......
Total		395	278	19	1		3493	1527	......	....

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

Month.	Carleton.					Fifteen Mile Stream.				
	Number of Mines	Tons Crushed	Yield of Gold.			Number of Mines	Tons Crushed	Yield of Gold		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
1910										
October	No Crushing		...	...	...	1	112	92	0	0
November	1	10	8	0	0	...	No Crushing		...	...
December	No Crushing		...	...	...	...	No Crushing		...	...
1911										
January	1	15	8	0	0	...	No Crushing		...	...
February	No Crushing		...	...	...	...	No Crushing		...	...
March	1	20	18	8	2	...	No Crushing		...	...
April	No Crushing		...	...	...	...	No Crushing		...	...
May	1	3	2	7	0	...	No Crushing		...	...
June	No Crushing		...	...	...	1	50	36	0	0
July	No Crushing		...	...	...	1	80	27	7	0
August	No Crushing		...	...	...	...	No Crushing		...	...
September	No Crushing		...	...	...	...	No Crushing		...	...
Total	...	48	36	15	2	...	242	155	7	0

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

Month.	Stormont.				
	Number of Mines	Tons Crushed	Yield of Gold.		
			Oz.	Dwt.	Grs.
1910					
October	1	25	16	6	....
November ..	3	265	37	9	......
December ...	No Crushing			....	......
1911					
January.....	No Crushing		......	......	......
February ...	No Crushing		......	....	....
March	No Crushing		.... .	......	....
April	1	26	15	17	......
May	1	87	34	14	12
June	No Crushing		....	......	....
July	2	39	8	2	....
August	1	138	33	....	....
September...	2	118	24	10	....
Total ...	......	698	169	18	12

District.	Tangier.				
	Number of Mines	Tons Crushed	Yield of Gold.		
			Oz.	Dwt.	Grs.
Fifteen Mile Brook	1	250	25	15	......
Kemptville	1	25	16	6	......
Malaga Barrens ...	1	233	69	14	12
Montagu	1	41	24	2	....
Sherbrooke	Mortared		3	9	....
Shiers Point	1	14	7	6	......
*Wagamatkook ...	1	125	23	4	....
Uniacke	1	10	......	2	....
Total........	......	698	169	18	12

*Returns from this District show a production of 5 oz. silver also.

INTERCOLONIAL RAILWAY.

Statement of coal shipped from Nova Scotian mines during the year ended 30th September, 1911.

To	Tons	To	Tons
Halifax Freight	105,236	*Brought forward*	
Fairview	787		
Rockingham	663	Pictou Landing	58,538
Rocky Lake	164	West Merigomish	23
Bedford	682	Merigomish	474
Scotia	119	Avondale	261
Windsor Jct	37,149	James River	64
Sandy Cove	49	Antigonish	7,195
Waverly	188	South River	18
Dartmouth	34,962	Pomquet	12
Oakfield	63	Heatherton	28
Enfield	746	Bayfield	33
Malcolms	52	Tracadie	29
Elmsdale	91	Monastery	13
Milford	56	Har. au Bouche	18
Dewis	103	Pirate Harbor	31
Shubenacadie	596	Mulgrave	18,080
Stewiacke	399	Point Tupper	2,116
Grahams	1	McIntyre's Lake	24
Brookfield	33	West Bay Road	20
Truro Freight	80,391	River Denys	81
Valley	72	Xmas Island	109
Riversdale	18	Orangedale	122
West River	49	Point Edward	1,912
Landsdowne	28	McKinnon's Har	17
Glengarry Ho	49	Cleveland	20
Hopewell	1,534	Iona	682
Muir's	432	Big Beach	38
Eureka Mills	648	Grand Narrows	634
Ferrona Jct	972	Beaver Cove	7
Stellarton	44,200	Shenacadie	36
Westville	25,763	Boiestown	57
Camerons Sdg	142	Jacksons	18
Trenton	35,297	Barrachois	33
Carried forward		*Carried forward*	

INTERCOLONIAL RAILWAY—(*Continued*).

To	Tons	To	Tons
George's River	49	*Brought forward*	
Porters	30		
Young's	56	Scotsburn	96
North Sydney	5,936	Lyon's Brook	1,080
Balls	135	Brown's Point	14
Sydney Mines	1,582	Pictou	26,421
Ottawa Brook	20	River Philip	8
Leitchee's Brook	185	Salt Springs	36
Scotch Lake	455	Springhill Junction	23,127
Sydney River	40	Gypsum	454
Sydney Freight	18,870	Athol	45
Belmont	44	Maccan	6
Onslow	30	Nappan	7
Debert	15	Fort Lawrence	14
East Mines	216	Amherst Freight	58,553
Londonderry	8,887	Aulac	121
Folleigh	96	Haliburton	47
Wentworth	7	Lockbroom	20
Westchester	21	Coles Island	57
Atkinsons	25	Sackville	12,525
Thomson	39	Dorchester	2,618
Oxford Junction	3,274	Upper Dorchester	46
Oxford	2,843	College Bridge	826
Conn's Mills	44	Memramcook	263
Pugwash Junction	47	Calhoun's	20
Pugwash	2,176	Painsac Junction	39
Wallace Bridge	27	Scoudac	17
Wallace	493	Shediac	1,212
Malagash	120	Point Du Chene	650
Tatamagouche	695	Humphreys	182
Urquharts	13	Sunny Brae	553
Denmark	116	Moncton Freight	140.288
Wilsons	70	Salisbury	2,807
River John	944	River Glade	267
Syslvesters	58	Penobsquis	21
Meadowville	48	Sussex	3,465
Carried forward		*Carried forward*	

INTERCOLONIAL RAILWAY—(*Continued*).

To	Tons	To	Tons
Norton	7	*Brought forward*	
Bloomfield	23		
Hampton	627	Belledoune	22
Nauwigewauk	39	Hamiltons	20
Jubliee	28	Dalhousie	248
Rothsay	211	Campbellton Freight	56,074
St. John Freight	25,017	Matapedia	8,149
Corbetts	385	Kempt	31
Adamsville	31	Little Metis	52
Harcourt	324	St. Flavie	48,908
Kent Junction	875	Rimouski Freight	1,880
Acadiaville	54	Riv. du Loup	23,332
Chatham	1,519	St. Pascals	126
Loggieville	1,480	Riv. Ouelle Whf.	2,638
McGivney's	1,866	St. Jean P. Joli	864
Cross Creek	20	L'Islet	772
Marysville	1,879	Carrier	5,433
Gibson	3,533	Chaudiere Jct	9,467
Fredericton	4,963	Levis Freight	898
Indiantown	73	Pt. Levis	140
Millerton	7,122	Villeroy	944
Derby Junction	33	Nicolett	75
New Castle	19,140	Drummondville Sta.	2,228
Red Pine	22	Montreal Freight	19,380
Gloucester Jct.	2,430	Jacques Cartier Jct.	152
Bathurst	588	G. T. R. via	
Nepisiquit Jct	730	Chaudiere	270
Petite Rouche	21	C. P. R. via	
Prescotts	42	St. John	290
Carried forward		Total	1041,563

INTERCOLONIAL RAILWAY—(*Continued*).

SUMMARY.

From	Tons
Stellarton	502,054
Westville	34,434
New Glasgow	59,930
Point Tupper	105.929
No. Sydney	47,646
Sydney	12,548
Debert	6,731
Springhill Jct	71,650
Maccan	200,641
Total	1041,563

INTERCOLONIAL RAILWAY.

Statement of Coal Received from the various Mines in Nova Scotia during year ended September 30th, 1911.

NAME OF COMPANY,	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
Cumberland Railway & Coal Co.	1296¾	1372¼	957½	423	736½	1072¼	998½	1668½	7174½	4526½	4484	4961½	29671¾
Maritime Coal Company	5874½	7389½	6061¾	6329¼	7202½	8028¼	6958	8289½	7687½	7933¾	9011¾	5531	86627¼
Minudie Coal Company	1822¼	2835¾	2045½	2696	394¾	2657½	3126¼	3835¼	2487	2258¼	2478½	2068	28705
Great Northern Company	77½	187½	262¾	265½	484¾	486½	717¾	565¾	301	....	....	....	3349
Intercolonial Coal Company	4628¾	7385	9912	11451½	10187½	13217	10582¾	5930¾	5057¾	5070	4022	4686¾	92131¾
Acadia Coal Company	9057¾	13519¾	11543	11060	10020¾	14669	14124	10413¾	6723	6700½	5484¾	4622¾	117939
MacKay Mining Company	516¼	861	1137½	874¼	744	1275½	1471	1362¼	1670	1488	1770½	1742	15012¼
Inverness Coal Company	2103	1357½	2109	1496½	1680	2660	2605	3759	2933¾	2739½	2639	2789½	28871¾
Nova Scotia Steel & Coal Co.	538	1175¾	974½	615	1519¾	2079	456½	103¾	29	....	....	59½	7550¾
Dominion Coal Company	1752¾	1389½	1845½	1212½	1730	2835½	2224	684½	282¾	221½	233½	369½	14781½
Total Rail Shipments	27667½	37473½	36849	36423½	34700½	48980½	43293¾	36613	34346¼	30938	30224	27130½	424640
WATER SHIPMENTS													
Dominion Coal Company	12348	....	....	....	....	....	....	6035	11614	12767	6652	13514	62930
Nova Scotia Steel & Coal Co.	....	....	....	....	....	....	....	4871	15577	....	15815	15814	52077
Port Hood Coal Company	1384½	1821	....	....	....	....	....	2045	3506	....	....	....	8756½
Inverness Coal Company	3391½	....	....	....	....	....	....	....	3357	3323¾	....	....	10072¼
North Atlantic Collieries	1747¼	3182	1806¾	382¼	1649½	168	....	414¾	....	1612½	1934½	1345½	14246
Acadia Coal Company	....	....	....	....	....	....	....	....	....	....	2884¼	....	2884¼
Total Water Shipments	18871¼	5003	1806¾	382¼	1649½	168	....	13365¾	34054	17703¼	27285¾	30676½	150070
Total Rail Shipments	27667½	37473½	36849	36423½	34700½	48980½	43293¾	36613	34346¼	30938	30224	27130½	424640
Total for year	46538¾	42476½	38655¾	36805¾	36350	49148½	43293¾	49978¾	68400¼	48641¼	57509¾	57807	575006

TOTAL SHIPMENTS FROM EACH COMPANY FOR THE YEAR.

Cumberland Railway & Coal Co.	29671¾
Maritime Coal Company	86627¼
Minudie Coal Company	28705
Dominion Coal Company	77711½
Great Northern Coal Company	3349
Acadia Coal Company	120823¼
Inverness Coal Company	38944
Port Hood Coal Cempany	8756½
Intercolonial Coal Company	92131¾
MacKay Mining Company	15012¼
Nova Scotia Steel Company	59627¾
North Atlantic Collieries	14246